EFFECTS OF A PSYCHOEDUCATIONAL GROUP ON SIBLINGS OF CHILDREN WITH AUTISM SPECTRUM DISORDERS

by

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ABSTRACT

The current study evaluated the effectiveness of a program developed for siblings of children with autism spectrum disorder. A total of 26 target siblings and their families participated in this study. The target siblings participated in a weekly, 2-hour intervention program, Siblings Helping Siblings, that lasted for 7 weeks. Components of this program included recreational activities as well as didactic lessons on problem-solving skills, coping strategies, and autism spectrum disorder. Outcome variables were measured at preintervention, postintervention, and 8-10 weeks following intervention. Sibling relationship quality was measured through parent and child report and coping strategies were measured via a child report measure. Sibling interaction quality was assessed through videotaped observations of dyadic interactions between the target sibling and the sibling affected with autism spectrum disorder. Analysis of variance was used to analyze obtained data.

Results indicated that parent perceptions of sibling relationship quality improved following intervention and increases in positive sibling interaction during unstructured playtime were also found postintervention. Exploratory analyses also suggested positive effects on target siblings' knowledge of autism spectrum disorder as well as reduction in parent-reported internalizing symptoms in the target children. Results also suggested that response to this intervention program may be impacted to some degree by the sex and

diagnostic status of the target child. Clinical implications and future research directions are discussed.

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CHAPTER 1

INTRODUCTION

Description of Autism Spectrum Disorders

Autistic Disorder is a neurodevelopmental disorder that is typically diagnosed in childhood and is marked by the presence of impairments across social and communication domains, as well as by the presence of repetitive and stereotyped behaviors or restricted interests (American Psychiatric Association, 2000). Pervasive Developmental Disorder, Not Otherwise Specified and Asperger's Disorder are disorders with similar symptoms, and together, this set of disorders is commonly referred to as autism spectrum disorders. Autism spectrum disorders are considered lifelong disorders with severity of symptoms ranging from mild to severe; thus, the need for intervention varies greatly as well, from minimal assistance to intensive services. The most recent surveillance studies conducted on autism spectrum disorders in the United States estimated that 1 in 88 children were affected (Centers for Disease Control and Prevention, 2012). Estimates varied between study sites, with Utah showing a 1 in 47 prevalence rate. These most recent estimates represent an increase in prevalence rates from previous years. While autism spectrum disorders were previously considered low-incidence disorders, their occurrence is becoming less of a rarity. In fact, researchers have

cited public awareness, broader interpretations of diagnostic criteria, and improved diagnostic tools as explanations for this increase (Gernsbacher, Dawson, & Goldsmith, 2005; Wing & Potter, 2002). Regardless of the cause of this prevalence increase, more children and more families are being affected by autism spectrum disorders.

Impact on Parental Functioning

Autism spectrum disorders affect a large number of children, and like other disabilities, autism spectrum disorders can impact the families of individuals with this diagnosis in several ways. Considerable research has been conducted in order to determine how having a child with any disability impacts families, with much of the research focusing on parental adjustment. Research that specifically addresses the impact of autism spectrum disorders on families indicates elevated stress levels in parents of affected children, even when varied research methods and varied samples were used. For instance, using the 2003 National Survey of Children's Health, Schieve et al. (2007) found that parents of children with an autism spectrum disorder reported higher levels of aggravation than parents of children with other disabilities. In 2009, Rao and Beidel compared the self-reported stress levels of 15 parents of children with high functioning autism to stress levels of parents of 15 matched control children. Results indicated significantly higher levels of stress in parents of children with high functioning autism. Moreover, Dabrowska and Pisula (2010) compared parenting stress and coping styles of parents of children with autism spectrum disorders and parents of children with Down syndrome. Not only did their findings demonstrate that parents of children with autism spectrum disorders reported higher stress levels than parents of children with Down

syndrome, this study also found that mothers of children with autism spectrum disorders reported higher stress than their male partners. The finding that parents of children with autism spectrum disorders experience more stress in comparison to parents of children with other disabilities and parents of those without known disorders has been well documented (Baker-Ericzen, Brookman-Frazee, & Stahmer, 2005; Bundy & Kunce, 2009; Sanders & Morgan, 1997).

Other studies have examined specific factors that may contribute to or buffer against elevated parental stress levels. For instance, researchers found that autism severity was the most consistent and strongest predictor of stress after examining the responses to self-report questionnaires by 77 caregivers (Lyons, Leon, Phelps, Roecker, & Dunleavey, 2010). Another study found that self-reported maternal stress levels of 48 parents were predicted by the affected child's overall level of behavior problems, as opposed to specific symptoms related to autism or adaptive behavior levels (Hastings et al., 2005). In a more recent study, Giallo, Wood, Jellet, and Porter (2011) used an online survey to examine the response of 50 Australian mothers of children with autism. Results indicated that this group experienced significantly higher fatigue than parents of typically developing children. The authors also noted that fatigue was related to parents' perceived need for social support.

In addition to the impact on parents individually, research also indicates that having a child with an autism spectrum disorder can impact the marital relationship. Higgins, Bailey, and Pearce (2005) surveyed 53 parents of children with autism spectrum disorders, and these parents reported lower marital happiness compared to parents of typically developing children. Similarly, a more recent study conducted in Taiwan found

that parents reported less marital satisfaction when they had a child with an autism spectrum disorder compared to parents of typically developing children (Gau et al., 2012). Given the available research, it is apparent that there are clear risk factors for parents of children with autism spectrum disorders.

Impact on Family Functioning

In addition to the evidence that parents of children affected by an autism spectrum disorder experience higher stress and adjustment difficulties, research also has shown that having a child with an autism spectrum disorder may affect family functioning in several domains, such as family cohesiveness and family routines. With regard to family cohesiveness, studies found that families affected by autism spectrum disorder experience a lower level of cohesion than the general population (Gau et al., 2012; Higgins et al., 2005). These studies indicated that family members were less supportive of each other and engaged in fewer shared interests with one another when compared to normative samples. In 2005, Hutton and Caron interviewed 21 parents of children with autism regarding the impact the disorder had had on their families. These parents commonly reported that their typical family routines were disrupted because of their child's special needs. Some of these disruptions included being unable to participate in enjoyable family activities such as going to an amusement park or going on a family vacation. Parents reported difficulties experienced by their typically developing children as well, such as feelings of jealousy and resentment. Some studies have identified that behaviors exhibited by the affected sibling and loss of family income due to increased spending related to treatment are barriers to participating in family activities (Montes & Halterman,

2008; Schaaf, Toth-Cohen, Outten, Benevides, & Teal, 2011). Another study that examined written narratives of parents of children with autism spectrum disorders highlighted the diminished ability of these families to participate in social events (Phelps, Hodgson, McCammon, & Lamson, 2009). Similar to other findings, these parents reported perceptions of sibling jealousy and reduced time to spend with their typically developing children. While the impact is likely different in each family system, having a child with special needs related to autism spectrum disorders can greatly change how a family functions across multiple domains.

Impact on Siblings

Research studies examining the impact of autism spectrum disorders on parental and family functioning frequently highlight parent concerns for the typically developing children in their families. Some of these concerns include sibling jealousy, reduced time spent with the typically developing child, reduced financial resources to spend on the typically developing sibling, differential parenting techniques, and lack of sibling understanding (Hutton & Caron, 2005; Montes & Halterman, 2008; Phelps et al., 2009; Schaaf et al., 2011). Much of the research investigating the impact of autism spectrum disorders on siblings has examined social, emotional, and behavioral functioning in typically developing siblings, more broadly termed "sibling adjustment" for the purposes of this review. The child development literature has frequently noted the importance of the sibling relationship in healthy child development; therefore, research examining the impact that autism spectrum disorders have on this relationship is reviewed below. Additionally, while research on sibling knowledge and understanding of autism spectrum

disorders is limited, multiple researchers, clinicians, and practitioners have indicated that sibling knowledge of the disorder is an important part of helping typically developing siblings understand and manage the unique circumstances of having a sibling with autism spectrum disorder (Howlin, 1988; Lobato & Kao, 2002; Meyer & Vadasy, 2008).

Sibling Adjustment

The research on sibling adjustment for those who have siblings with autism spectrum disorders is complex. Not only are the research outcomes widely varied, but the research methodology also varies from study to study. Differences in methodology are readily apparent when examining study sample composition, comparison groups, measurement methods, and statistical analyses. Given this variability, making generalized statements regarding the impact of having a sibling with autism on sibling adjustment is difficult. Some researchers have suggested that siblings of individuals with autism spectrum disorder are at no higher risk for adjustment problems, while other studies concluded there is a need for monitoring and intervention due to a higher likelihood of adjustment problems. Still others surmised there are even benefits to having a sibling with an autism spectrum disorder. These findings are further delineated below.

Indications of Negligible Impact

Several studies have found a lack of evidence for siblings of children with autism spectrum disorders being at higher risk than other children for either externalizing or internalizing problems. One of the earliest studies comparing sibling adjustment indicated no significant differences in behavioral or emotional functioning when comparing 30

siblings of children with autism spectrum disorders to 30 siblings of children with mental retardation and 30 siblings of children without known disabilities (McHale, Sloan, & Simeonson, 1987). A more recent study comparing siblings of children with autism to siblings of children with Down syndrome and siblings of children without known disabilities also found no differences in behavioral or emotional functioning (Kaminski & Dewey, 2002). Similarly, a study conducted in Jerusalem that compared siblings of children diagnosed with autism to siblings of children diagnosed with intellectual and language disabilities found no significant differences in scores on measures of either social-emotional functioning or adaptive functioning (Pilowsky, Yirmiay, Dopplet, Gross Turr, & Shaleve, 2004). In 2010, Quintero and McIntyre examined sibling adjustment by comparing older siblings of preschool students with autism to older siblings of preschool students without a known disability. Neither teacher nor parent reports of siblings' behavioral and academic functioning differed significantly between groups. Additionally, in a sample of children with autism who were receiving intensive applied behavior analysis (ABA) services in the United Kingdom, no evidence for social or behavioral adjustment difficulties was found when compared to a normative sample of maternal ratings of adjustment in unaffected siblings (Hastings, 2003). Tomeny, Barry, and Bader (2012) compared 42 families with one affected child and one typically developing child with 42 families who had two typically developing children. They found that externalizing symptoms, and particularly, internalizing symptoms in a sibling, predicted internalizing and externalizing symptoms in the target child, regardless of diagnostic status or autism severity. These results may indicate that global maladjustment may impact siblings more than behaviors associated with a particular diagnosis. Together,

these studies suggest that siblings of children with autism spectrum disorders are at no greater risk for adjustment difficulties than siblings of children with other disabilities or siblings of children without known disabilities.

Indications of Positive Impact

While several studies highlight no significant differences in adjustment between siblings of children with autism spectrum disorders in comparison to other sibling groups, a few studies actually show some positive benefits for these siblings. For instance, in a study that attempted to identify possible moderating/mediating factors that contribute to sibling adjustment, it was found that having a sibling with autism was associated with higher self-concept in a sample of 51 children (age 7-17) compared to a sample of 35 siblings of typically developing children (Macks & Reeve, 2007). Verte, Roeyers, and Busse (2003) also identified potential positive outcomes, in that sisters of children with high functioning autism had higher self-report scores of social competence. One study even highlighted how having a sibling with autism spectrum disorders may influence unaffected siblings to pursue careers in the helping professions such as special education (Marks, Matson, & Barraza, 2005). A 2012 study utilized not only parent rating scales, but also teacher rating scales to characterize emotional and behavioral adjustment in typically developing siblings of children with autism spectrum disorder, and their results indicated fewer emotional problems than would be expected in the general population (Dempsey et al.). Other studies have also indicated elevated levels of self-esteem and self-concept as potential benefits to having a sibling with an autism spectrum disorder (Ferrari, 1984; Mates, 1990). Together, these studies indicate potential for some positive

outcomes associated with having a sibling affected by autism spectrum disorders, particularly in the area of self-concept.

Indications of Negative Impact

In addition to findings indicating positive effects or no additional risk, other research studies found siblings of children diagnosed with an autism spectrum disorder to have more adjustment difficulties in the areas of behavioral functioning, as well as emotional functioning. Moreover, some studies have also noted evidence of diminished social functioning. In one of the earlier studies examining sibling adjustment, Rodrigue, Geffken, and Morgan (1993) compared siblings of children with autism to siblings of children with Down syndrome, as well as siblings of typically developing children. The siblings of children with autism were more likely to have higher scores on parent report measures of internalizing and externalizing problems than siblings in the comparison groups; however, their scores were still within the typical range of functioning. While this finding does not indicate clinical levels of internalizing or externalizing behaviors for siblings of children with autism spectrum disorders, it may suggest that this population is at higher risk for internalizing and externalizing problems relative to the comparison groups included in the study.

Verte et al. (2003) compared 29 siblings of children with high functioning autism and 29 siblings of typically developing children. Siblings of individuals with high functioning autism had higher levels of internalizing problems, externalizing problems, and overall behavior problems, based on parent ratings. In 2009, Petalas et al. conducted a study that compared siblings of children with autism and intellectual disability to

siblings of children diagnosed only with intellectual disability. Greater adjustment problems were found among siblings of children who had both autism and intellectual disability diagnoses. For female participants, internalizing symptoms increased when the typically developing sibling was a younger sibling and when the affected sibling was male. Rao and Beidel (2009) found that parents of children with high functioning autism rated unaffected siblings higher on adjustment difficulties than parents of typically developing children. Poorer health and increased depressive symptoms were also associated with being a sibling of someone with autism (Hodapp & Urbano, 2007). Mack and Reeve (2007) found that parent-rated adjustment factors were scored more negatively for siblings of children with autism compared to siblings of children not diagnosed with autism, along with higher levels of parent-reported anxiety. In 2012, Chou et al. found that unaffected siblings of children with autism spectrum disorder were at risk for sleep difficulties, including insomnia, sleep talking, and nightmares.

Another study conducted by Hastings (2003) was indicative of higher rates of overall adjustment problems for siblings of children with autism spectrum disorders. Specifically, this group had lower levels of prosocial behaviors and higher levels of peer relationship difficulties. Interestingly, younger siblings of children with autism tended to have poorer results on outcome measures. An earlier study also indicated difficulty with social functioning when a sibling was diagnosed with an autism spectrum disorder, including feelings of loneliness and having few friends in comparison to siblings of children with other disorders (Bagenholm & Gilberg, 1991). Other studies comparing siblings of children with autism spectrum disorders to groups of siblings of children with and without disabilities have found higher rates of adjustment problems in several areas,

including social, emotional, and behavioral functioning (Benson & Karlof, 2008; Fisman et al., 1996; Fisman, Wolf, Ellison, & Freeman, 2000; Gold, 1993; Lainhart, 1999; Mascha & Bocher, 2006). While the research literature is mixed, there are multiple studies indicating that some siblings of children with autism spectrum disorders are at risk for a variety of adjustment difficulties.

Factors that Influence Sibling Adjustment

Several studies have focused on examining specific factors that may contribute to or otherwise impact functioning of siblings of children with autism spectrum disorders. One study indicated that higher scores on measures of internalizing and externalizing disorders were associated with the unaffected sibling being older and when marital satisfaction among their parents was lower (Rodrique, Geffken, & Morgan, 1993). Mack and Reeve (2007) also identified risk factors for adjustment problems among siblings of children with autism, such as being male, coming from a lower socioeconomic status, only having one sibling, and being an older sibling. These factors, when taken together, predicted adjustment problems only for the siblings of children with autism, and the authors surmised that these factors may make one more susceptible to adjustment difficulties.

Orsmond and Seltzer (2009) found that other factors may play an important role in the adjustment of adolescents who have a sibling with an autism spectrum disorder. This study did not employ a control or comparison group; however, the researchers examined within-group differences. Female adolescent siblings were more likely to experience anxiety and depression than male siblings, and having a family history of

autism spectrum disorder was predictive of depressive symptoms in both male and female siblings. Moreover, maternal depression and higher scores on a measure of the broader autism phenotype were also associated with higher anxiety and depressive symptoms in adolescent siblings of children diagnosed with an autism spectrum disorder (Orsmond & Seltzer, 2009). A similar study that used a less restrictive age group for siblings (6 to 18 years) yielded similar results; overall, higher scores on a measure of the broader autism phenotype were associated with more adjustment difficulties, and symptom severity in the affected sibling was predictive of more adjustment difficulties in the unaffected sibling (Meyer, Ingersoll, & Hamrick, 2011). Research conducted by Petalas et al. confirmed accounts that adjustment may be particularly difficult for siblings of children with autism spectrum disorder, if they themselves exhibit subclinical levels of characteristics associated with autism spectrum disorders (2012). Quintero and McIntyre (2010) also demonstrated that maternal stress was positively correlated with parent-reported behavioral problems in the typically developing sibling and negatively correlated with parent-reported social skills in the typically developing sibling. Two studies found social support to be a significant positive factor in sibling adjustment. Higher levels of social support were found to be associated with better adjustment (Kaminsky & Dewey, 2002), and indirectly affected adjustment by moderating the impact of autism symptom severity in the affected sibling (Hastings, 2003). Some researchers have suggested that treatment/interventions for children with autism spectrum disorders may impact their siblings without autism spectrum disorder. Cebula (2012) examined behavioral adjustment before and after affected siblings participated in an intensive applied behavioral analysis intervention, but found no significant differences in

the behavioral adjustment for the typically developing siblings from preintervention to postintervention.

Published reviews of the literature highlight the mixed results that exist in the current research regarding siblings of children with autism spectrum disorders (Meadan, Stoner, & Angell, 2010). Despite these variable results, a more recent review of several articles suggested that screening of unaffected siblings is warranted, given that the literature does indicate that there are some siblings who are negatively impacted when a family member is affected by autism spectrum disorders (Smith & Elder, 2010). Schunterman (2007) also concluded that clinical assessment of typically developing siblings is necessary in order to identify family needs beyond the needs of the individual affected sibling. It seems that while not all siblings of children with autism spectrum disorders will experience negative effects, there is enough evidence to suggest that these children may be at risk, and further research is needed to ascertain whether interventions aimed at preventing potential difficulties are effective.

Coping Strategies in Siblings of Children with Disabilities

Researchers often recommend teaching coping strategies in order to help ameliorate potential adjustment difficulties due to having a sibling with a disability; however, explicit research examining the coping skills of siblings is scarce. Orsmond, Kuo, and Seltzer (2009) examined how adolescent coping styles may impact those who have a sibling with autism. This study found that more frequent and severe behavior problems in the affected sibling were associated with less engagement between sibling dyads; however, use of more problem-focused coping strategies as opposed to emotion-

focused coping strategies moderated the effects of the affected sibling behaviors on engagement time between siblings. An unpublished dissertation study indicated that typically developing adolescent siblings of children with autism spectrum disorders most frequently engaged in distraction coping. This study also found that female siblings were more likely to engage in social support seeking (Vliem, 2010).

Considerably more research has been conducted on the coping styles of siblings of children with a wider range of disabilities beyond just autism spectrum disorders. Orfus and Howe (2008) interviewed 12 siblings of children with special needs about their experiences with their siblings. The authors found that overall, siblings indicated that they used wishful thinking most frequently, while the least endorsed coping strategy was ignoring the problem. Differences in coping strategies were found based on age as well as gender. Older siblings (10 to 12 years old) were more likely to indicate that they would "keep quiet about the problem" compared to younger siblings. Moreover, female siblings reported higher use of active problem solving coping and social support seeking compared to male siblings, while males generally reported using higher rates of wishful thinking (Orfus & Howe, 2008). Another study found that adolescent siblings of children with disabilities reported feeling reticent about sharing their feelings regarding having a sibling with a disability, particularly when talking with family members. Participants also indicated that they sought social support from their peer group regularly (Opperman & Alant, 2003). The research literature to date suggests that coping strategies may vary for siblings of children with disabilities such as autism, but it remains unknown whether interventions aimed at improving coping skills may be beneficial.

Sibling Relationships

There is a considerable body of child development literature that details the importance of the sibling relationship, particularly for individuals with a disability (e.g., Petalas et al., 2012; Rivers & Stoneman, 2008; Travis & Sigman, 1998). For most people, the relationship they have with their sibling is the longest relationship of which they will be a part, lasting from birth to death. For individuals with a disability, siblings can be a significant source of support in addition to parental support, as siblings often take on a primary supportive role when parents can no longer fulfill that role due to advancing age or death. For individuals with autism spectrum disorders, the sibling relationship is particularly important, as their siblings are likely to be the most consistent similarly-aged social partner with whom they can develop and practice social competency skills (Orsmond & Seltzer, 2007; Reagon, Higbee, & Endicott, 2006). Social problem solving is also an area in which skills may be learned by the child with autism through ongoing interactions with siblings.

Regardless of disability status, several researchers have reported that sibling relationships in childhood not only impact child functioning, but also impact future adult functioning. Research indicates that sibling relationship quality in childhood persists into adulthood; therefore, efforts to improve sibling relationships may also have long-lasting effects (Brody, 1998). Studies examining sibling relationships between children without a known disability have provided insight into how aspects of the sibling relationship can impact other areas of functioning. For instance, high aggression, when coupled with high warmth in male sibling dyads, was associated with more positive peer relationships and fewer externalizing problems compared to dyads that were rated as having high conflict

with low support (Hetherington, 1988). Similarly, another study supported the notion that social adjustment, namely, self-control and self-competence, was higher for sibling dyads who experienced moderate amounts of both warmth and conflict in their relationship (Stormshak, Bellanti, & Bierman, 1996). These studies suggest that sibling relationships may provide conduits to developing social competence as well as social problem-solving skills for children.

Given that autism spectrum disorders, by definition, include deficits in communication and social functioning, and given the importance that has been placed on the sibling relationship by researchers in the child development field, the sibling relationship is clearly an area deserving of further research focus within this population. Published studies on the sibling relationship when one child has an autism spectrum disorder, however, are limited. Of the few studies that exist, there are mixed findings.

One of the earlier studies examining sibling relationships indicated that relationships characterized by more negativity were likely to include typically developing siblings who were worried about the future of their siblings affected by autism spectrum disorder, perceived parental favoritism of the child with autism spectrum disorder, and had feelings of rejection toward their siblings affected with autism spectrum disorder (McHale, 1986). This study also found that a protective factor for positive sibling relationships was a typically developing sibling who had understanding and knowledge of their sibling's disability. Kaminsky and Dewey (2001) compared three groups of siblings: 30 individuals with a sibling with autism, 30 individuals with a sibling with Down syndrome, and 30 individuals with siblings without any known disability. All participants completed self-report measures, and results suggested that siblings of

children with autism reported less intimate and less nurturing relationships in comparison to siblings of individuals with Down syndrome or no known disability. Siblings of children with autism also reported observing less frequent prosocial behaviors in their siblings. Positive aspects of the sibling relationship were also apparent in this study, with siblings of children with either autism or Down syndrome reporting higher rates of admiration for their sibling and less of a need to compete with their sibling. In a more qualitative study using a brief unstructured interview in order to characterize the relationship with the affected sibling, no differences in sibling relationship quality were found between the groups studied (Pilowsky, Yirmiya, Dopplet, Gross-Turr, & Shalev, 2004).

Using a family systems approach, another study used reports from the unaffected sibling and parent in order to examine the sibling relationships among 50 families in which 1 child had an autism diagnosis (Rivers & Stoneman, 2003). The authors found that marital stress was negatively correlated with quality of sibling relationship as reported by the unaffected sibling. Moreover, unaffected siblings were less satisfied with the sibling relationship when marital stress was high. Notably, when families with high marital stress utilized informal means of social support, siblings were less likely to endorse items indicating negative relationship qualities. Use of formal social support was also correlated with more positive relationships when marital stress was high. These results suggest that social support serves as a positive buffer for the effects of high marital stress. This same study also reported that unaffected siblings frequently endorsed being disturbed by their siblings' behaviors (Rivers & Stoneman, 2003). In a later study, the same authors explored parenting styles and child temperament in order to help better

understand relationship quality when one sibling has an autism spectrum disorder. They found that when unaffected siblings were dissatisfied with differential parenting or felt they were treated unfairly, the quality of the sibling relationship decreased (Rivers & Stoneman, 2008).

Hodapp and Urbano (2007) examined sibling relationship quality by using an adult sample of siblings of individuals with autism or with Down syndrome. They found that adult siblings of individuals diagnosed with autism reported less intimate sibling relationships and less frequent contact with their siblings in comparison to adult siblings of individuals with Down syndrome. Another study examined the sibling relationship during adolescence and adulthood with a sample of siblings of individuals diagnosed with autism spectrum disorder (Orsmond, Sekuo, & Seltzer, 2009). In general, female participants tended to view their affected sibling more positively than male participants. Behavioral problems in the affected sibling were negatively correlated with participant-rated sibling relationship quality, and when behavior problems were high, participants indicated that they spent less time with their sibling (Orsmond et al., 2009). However, when unaffected siblings used more problem-focused coping skills, behavior problems in the affected sibling had less of an effect on the amount of time spent engaged with one another. Higher levels of social support were associated with more positive sibling relationships, as well as better functioning in the unaffected sibling (Orsmond et al., 2009). Behavioral problems in children with autism spectrum disorders also predicted less warmth and more conflict/rivalry on sibling-completed questionnaires characterizing their relationship with their sibling affected by autism spectrum disorders (Petalas et al., 2012). While Cebula (2012) found no difficulties in behavioral adjustment following

affected sibling participation in applied behavior analysis, she did find that, following intervention, parents and typically developing siblings reported having more positive and fewer negative interactions, suggesting that treatment and intervention for affected children may in turn impact the quality of sibling engagement and thus the overall quality of the sibling relationship.

Orsmond and Seltzer (2007) reviewed literature on the impact of having a sibling with an autism spectrum diagnosis and highlighted a lack of consensus with regard to sibling impact as well as limited available research to consider. They indicated that both positive and negative aspects of sibling relationships were apparent in the published research to date. In another review, Beyer (2009) made several recommendations to help improve sibling relationships among typically developing siblings and their siblings affected by an autism spectrum disorder. These recommendations included teaching the typically developing child how to play with his/her affected sibling, and that parents set aside time to spend alone with their typically developing children. Beyer also cautioned that responsibilities placed on typically developing children should be reasonable and not too overwhelming. Most relevant to this current study is the author's recommendation to teach coping skills to the unaffected children in families that have a child with an autism spectrum disorder. Beyer (2009) identified emotional expression, knowledge of the disorder, and learning how to access social support as areas to target in supporting these siblings. Other researchers have echoed these sentiments, suggesting that social skills, stress coping skills, and psychoeducational support may be important areas to address for siblings of children with autism spectrum disorders (Petalas et al., 2012).

Sibling Knowledge and Understanding of Autism Spectrum Disorders

In addition to Beyer (2009), other researchers and clinicians have suggested that providing typically developing siblings with accurate and appropriate knowledge about disabilities is an important aspect when examining sibling functioning (McHale, 1986; Petalas, et al., 2012). They contend that accurate and developmentally appropriate knowledge of the disorder may help unaffected siblings cope by giving them insight into their sibling's disability and providing them with answers to their own and their peers' questions about their sibling with autism spectrum disorder (Beyer, 2009; Howlin, 1988). Despite these recommendations for research and clinical practice, sibling understanding of autism spectrum disorders has been rarely studied.

In a descriptive study conducted in Japan, 77 parents of a child with an autism spectrum disorder and at least 1 other child who was typically developing were interviewed about how they informed typically developing siblings about the disorder (Tanaka, Uchiyama, & Endo, 2011). Results indicated that on average, parents informed the typically developing sibling at the age of 9 years old. Parents were more likely to inform their unaffected children about their sibling's diagnosis when the typically developing child was an older sibling, when there was a larger age difference between the two siblings, and when they also characterized the affected child's functioning level to be low. The majority of parents indicated that when they informed their unaffected children, they referred to the diagnosis by name and gave examples of the sibling's deficits. During the informing process, 61% of parents indicated that their typically developing children had questions about the affected sibling, with many of the questions focused on communication deficits, and 70% of parents indicated that their typically developing

child had already noticed some differences in their affected sibling by the time parents informed them about their sibling's disability (Tanaka et al., 2011).

One of the few studies that attempted to empirically measure sibling understanding of autism used a self-report measure (Ross & Cuskelly, 2006). Results indicated that their sample of 25 typically developing siblings had a fair understanding of autism (average score of 66%) and this knowledge did not appear to be associated with parent reports of sibling adjustment (Ross & Cuskelly, 2006). Glasberg interviewed typically developing siblings using a research-based method in order to gauge cognitive sophistication in thinking about illness. A total of 63 siblings, ages 5 to 17 years old, were interviewed; responses were coded regarding cognitive level and parents were asked to predict their child's responses. The authors found that the siblings' responses fell consistently below what would be expected, given their level of cognitive development. When comparing parent predictions to sibling participant responses, parents accurately predicted what their typically developing children knew regarding the affected child's diagnosis, but they overestimated their typically developing child's perception of the impact an autism spectrum diagnosis had on their sibling. Notably, although parents accurately predicted their responses, unaffected siblings often did not understand autism etiology. In addition, while 90% of parents indicated that their unaffected child would know the name of their affected child's diagnosis, 1 in 5 children indicated that they had never heard of the name of their sibling's diagnosis (i.e., autism or Asperger's) before. These results suggest that repeated teaching and discussion may be helpful in order for children to continue to learn and develop their understanding of their sibling's disability. In another study, 2 siblings from two different ethnic backgrounds (European American

and Asian American) were interviewed about their siblings with autism spectrum disorder using a developmentally friendly way of interviewing that involved drawing (Sage & Jegatheesan, 2010). These authors suggested that cultural views of disability may also greatly impact typically developing children's understanding of their siblings' diagnosis.

While the concept of sibling understanding of autism spectrum disorders has been rarely studied, two studies have linked accurate knowledge of a sibling's disability to a more positive relationship between sibling pairs (Kao & Lobato, 2002; McHale, Sloan, Simeonson, 1986). Having a clear understanding of a disorder and what strengths and challenges are associated with that disorder may help a sibling have more insight into their affected sibling's behaviors and mannerisms, thus helping the typically developing sibling to be more patient and ultimately foster a better relationship between them (Beyer, 2009; Howlin, 1988; Meyer & Vadasy, 2008; Petalas et al., 2012).

Sibling Interventions

While many siblings of children with autism spectrum disorders fare well and experience no adjustment difficulties, some siblings of children with an autism spectrum disorder are clearly at risk for adjustment difficulties and poorer sibling relationship quality, whether it is related solely to their sibling's disability or whether it is due to additional stresses in the family that co-occur with that disability. Moreover, due to the communication and social deficits characteristic of autism spectrum disorders, the sibling relationship may also be at risk for less frequent and less positive interactions between these dyads. Given these findings, several researchers and clinicians have recommended

assessment and intervention for siblings of individuals with autism spectrum disorders in order to prevent or ameliorate associated adjustment and relationship difficulties (Beyer, 2009; Meadan, Stoner & Angell, 2010; Schuntermann, 2007).

Only one published empirical study was found that examined the effectiveness of a group designed specifically to address needs of siblings of children with autism spectrum disorders. The sample consisted of 26 siblings of children with autism who had participated in different support groups held over several years (Smith & Perry, 2004). The group met on a weekly basis for 8 weeks. Goals of this support group included increasing knowledge about autism spectrum disorders, giving participants the opportunity to discuss feelings, having siblings share how they cope with having a sibling with an autism spectrum disorder, improving self-concepts, and encouraging children to have fun with each other during the group (Smith & Perry, 2004). Results indicated that overall self-concept was improved significantly after participation in the group, as was sibling knowledge of autism spectrum disorders. However, changes on an anger/resentment scale remained unchanged at posttest (Smith & Perry, 2004).

In addition to the one published empirical study noted above, a few unpublished dissertation studies have analyzed the effectiveness of support groups designed for siblings of children with autism. One dissertation examining the effects of a bibliotherapy-based program indicated that the siblings' autism knowledge increased significantly, and parents reported anecdotally that they observed differences in sibling understanding of autism spectrum disorders as well as increased patience with the affected sibling (Stobel, 2012). Another unpublished dissertation indicated a reduction in aggressive acts that the typically developing sibling committed against the affected

sibling following an education-based intervention (Martin, 2007). Several additional unpublished dissertations have detailed the development of programs for siblings of children with autism spectrum disorders; however, analyses of effects of the programs were not addressed (Guzman, 2009; Perez, 2009; Wright, 2006).

Although research on support groups for siblings of children with autism spectrum disorders is quite limited, research on the impact of support groups for siblings of children with other disabilities and conditions exist. Some studies have targeted siblings of children with wide ranges of disabilities, while others address needs related to a more specific condition. Studies on groups for siblings of children with cancer have found that participation in groups can reduce self-reported internalizing symptoms related to anxiety and depression in participating siblings (Barrera, Chung, Greenberg, & Flemming, 2002: Houtzager, Grootenhuis, & Last, 2001). Results from interviews with children who participated in such a group suggested that many children felt positive effects of participating, including having a sense of belonging, obtaining advice from others in similar situations, and helping them cope with difficult situations more effectively (Nolbris, Abrahamsson, Hellstrom, Olofsson, & Enskar, 2010). Other studies addressing needs of siblings with a wider range of special needs have found that when parents made anecdotal reports, they saw improvements in the participating sibling's behavior toward their affected siblings; however, standardized measures completed by parents and participating siblings revealed no differences between intervention groups and control groups on measures of behavior problems, self-concept, or knowledge about disabilities (McLinden, Miller, & Deprey, 1991). Studies on sibling support groups

generally find high levels of consumer satisfaction as reported by sibling participants and their parents (Barrera et al., 2002; Dodd, 2004; Dyson, 1998, McLinden et al., 1991).

Worldwide, programs have been established for siblings of children with disabilities, and several are specifically designed for siblings of children with autism spectrum disorders. Despite widespread use of these support programs for siblings of children with autism, there is a clear lack of efficacy research. One commercially available program, Sibshops, is a recreationally-based model designed for siblings of children with disabilities (Meyer & Vadasy, 2008). Registered programs using this model are most common in North America, with over 300 Sibshops registered on the Sibshop website between Canada and the United States. Sibshop models are also used internationally, with 17 registered Sibshops across 7 different countries (Sibling Support Project, n.d.). The format of Sibshops groups varies, with some agencies providing full- or half-day Sibshop programs while others may implement weekly meetings over several months. Some Sibshops are designed to address needs related to a specific disability or disorder, such as autism spectrum disorders, while others are designed to meet the needs of individuals with a wide array of disabilities and disorders. While the format and content may vary greatly from program to program, common goals of all Sibshop programs include opportunities for siblings to (1) meet one another, (2) discuss positive and negative experiences related to being a sibling of an individual with a disability, (3) learn how others handle situations related to being a sibling, and (4) learn about their sibling's disability. A fifth goal of Sibshops is to provide information to providers and parents about the issues that affect siblings of children with disabilities. Despite their widespread use, limited research has been conducted regarding the effectiveness of

programs using a Sibshop model. One study completed in Ireland used a sample of 16 children between the ages of 8 and 10 years old who had a sibling with a physical disability or intellectual disability or both. Over a period of 4 months, these siblings participated in four Sibshop sessions, each session lasting 3 hours. Via interviews, the authors found that most parents indicated high satisfaction and perceived benefits from their child's participation in the Sibshop program; however, no significant change was observed in standardized self-report measures of self-esteem in the participating sibling (D'Arcy, Flynn, McCarthy, O'Connor, & Tierny, 2005). In an unpublished dissertation study completed in 2003, parent and sibling participants reported that the Sibshop program consistently met three of its five proposed goals, including providing siblings with opportunities to meet other siblings of children with disabilities, having children share both negative and positive experiences they have had with their sibling, as well as ensuring that children enjoyed their participation in the program. Participant responses were inconsistent regarding how well the program provided opportunities for problem solving activities and education on disability (Schongalla, 2003).

While empirical research on groups for siblings of children with disabilities is limited, it is particularly lacking for groups that cater specifically to siblings of children with autism spectrum disorders. Additionally, although Sibshops is a widely used support group model for siblings of children with disabilities, there have been no published empirical studies that have examined the effects of using a Sibshop model that includes an educational component for siblings of children with autism.

Rationale for Current Study

Research on siblings of individuals with autism spectrum disorders is steadily increasing, and current research, although limited, suggests that some of these siblings may struggle with aspects of behavioral, emotional, and social adjustment. Moreover, typically developing siblings may have difficulty maintaining positive and interactive relationships with the affected sibling. Research on sibling knowledge and understanding of autism spectrum disorder is scarce; however, one study suggested that sibling knowledge of a sibling's autism diagnosis was associated with improved adjustment in the typically developing sibling (Kao & Lobato, 2002). Several other researchers have indicated that information and social support is associated with better adjustment in typically developing siblings (Hastings, 2003; Kaminsky & Dewey, 2001) and appears to have a positive impact on the sibling relationship as well (Kaminsky & Dewey, 2001; Rivers & Stoneman, 2008).

Researchers and clinicians have indicated that there is a need for typically developing siblings of children with disabilities, such as autism spectrum disorders, to receive intervention and support. Many programs and support groups for siblings of children with autism spectrum disorders have been implemented across the country; however, the published literature on their effectiveness is almost nonexistent. Sibshops is a program model used frequently for siblings of children with autism, but research on this program is, likewise, minimal.

The focus of the present study is to evaluate the effectiveness of a psychoeducational program for siblings of children with autism spectrum disorders. This program includes both a recreational component, like Sibshops, as well as a

psychoeducational component that targets knowledge, coping, and problem-solving skills. This program was designed as a short-term intervention that can be easily implemented within a school or community setting, while incorporating all of the goals proposed by the Sibshop model, as well as including helping children learn coping skills, gaining knowledge regarding autism spectrum disorder, and understanding the impact that autism has on their sibling, themselves, and their families.

This study advances current literature in several ways. First, it examines the effectiveness of an intervention for siblings of children with autism spectrum disorder, the Siblings Helping Siblings program, that is partially based on a widely available but rarely empirically evaluated intervention program, Sibshops. Secondly, this study examines infrequently studied aspects of sibling functioning, including the sibling relationship, sibling interactions, sibling understanding of autism spectrum disorders, and coping strategies of siblings of children with autism spectrum disorder. Moreover, this study employs multiple outcome modalities, including both self and parent report as well as direct observational data in order to examine the impact of participation in the program. No known studies exist that examine all three of these outcomes in evaluating program effectiveness for interventions with siblings of children with autism spectrum disorders. Furthermore, given that public schools are easily accessible and likely a consistent presence in the lives of both typically developing children and children with autism, it is an ideal environment to provide families with access to social support and intervention for their children. Therefore, this study utilizes a program format that can be easily implemented by school personnel such as a school psychologist, teacher, or counselor.

Research Questions

Primary Questions

1. Does participation in the Siblings Helping Siblings program change child-reported use of coping strategies in siblings of children with autism spectrum disorders?
2. Are any changes in child-reported use of coping strategies maintained 8 to 10 weeks following program completion?
3. Does participation in the Siblings Helping Siblings program improve parent and/or sibling reports of sibling relationship quality among dyads of participants and their siblings affected by autism spectrum disorders?
4. Are any improvements in parent and/or sibling reports of sibling relationship quality maintained 8 to 10 weeks following program completion?
5. Does participation in the Siblings Helping Siblings program improve observed sibling interaction quality between dyads of participants and their siblings affected by autism spectrum disorder?
6. Are any improvements in observed sibling interaction quality between dyads of participants and their siblings affected by autism spectrum disorder maintained 8 to 10 weeks following program completion?
7. How satisfied are consumers of the Siblings Helping Siblings program as reported by child participants and by their parents?

Exploratory Questions

A. Does participation in the Siblings Helping Siblings program increase knowledge of autism spectrum disorders in siblings of children with autism spectrum disorders?

B. Are any increases in knowledge of autism spectrum disorders maintained 8 to 10 weeks following program completion?

C. Does participation in the Siblings Helping Siblings program decrease parent reports of internalizing and externalizing behaviors in siblings of children with autism spectrum disorders?

D. Are any decreases in parent reports of internalizing and externalizing behaviors maintained 8 to 10 weeks following program completion?

E. Does participation in the Siblings Helping Siblings program increase parent reports of adaptive skills in siblings of children with autism spectrum disorders?

F. Are any increases in parent reports of adaptive skills maintained 8 to 10 weeks following program completion?

CHAPTER 2

METHOD

Participants

A total of 32 target children and their families were recruited to participate in this study. In order to be included in this study, child participants were required to be between the ages of 8 to 12 and have a sibling aged 12 years or younger, who had either a clinical diagnosis of an autism spectrum disorder (e.g., Autistic Disorder; Asperger's Disorder; Pervasive Developmental Disorder, Not Otherwise Specified; High Functioning Autism) or an educational classification of Autism under the Individuals with Disabilities Education Improvement Act (IDEIA) of 2004. Target participants were excluded from the study if they themselves had an autism spectrum diagnosis or an educational classification of Autism. While unaffected children were the primary participants in this study, their sibling affected with an autism spectrum disorder also participated in videotaped dyadic interactions with them. Parents of sibling dyads were secondary participants, as they were asked to complete several questionnaires regarding their children. A total of 6 families withdrew from participation at some point during the study. Two families withdrew from this study during the intervention phase due to schedule conflicts that resulted in their inability to attend the group intervention. Two other families withdrew following intervention but before postintervention data could be

obtained. Two families withdrew during preintervention data collection due to the affected sibling's intolerance of the task required during the dyadic interaction procedure. In these two cases, the target children participated in the Siblings Helping Siblings group; however, these families declined to participate in all further data collection procedures that required a separate study visit. Questionnaires were distributed to these families upon completion of the Siblings Helping Siblings group; however, these questionnaires were never returned. Given the resulting 18.75% attrition rate, a final sample of 26 participating families was obtained.

Of the 26 target participants (unaffected siblings), 53.8% were male and 46.2% were female. The mean age for target participants was 9.25 years old (*SD*=1.26). Sixteen of these participants were older than their affected siblings, while 9 target participants were younger than their sibling with an autism spectrum disorder. One target child participated with her twin brother with an autism spectrum disorder. Four of the target children had previously attended a different group designed for siblings of children with autism. Nine target children had a diagnosis other than autism spectrum disorder; 4 had a diagnosis of Attention Deficit/Hyperactivity Disorder, 2 had diagnoses of both Attention Deficit Hyperactivity Disorder and Oppositional Defiant Disorder, 2 had a diagnosis of anxiety, and 1 had diagnoses of anxiety and depression. For the purposes of data analysis, diagnostic status consisted of two groups: those with a diagnosis (*n*=9) and those participants without an identified diagnosis (*n*=17). The Social Responsiveness Scale, Second Edition (SRS-2; Constantino, 2012) was administered to target participants to rule out the possibility of autism spectrum disorders. On the SRS-2, the mean score for target children was 50.00, with a range of 40 to 58. The SRS-2 guidelines suggested that

scores in this range are generally not associated with clinically significant autism spectrum disorders; none of the target children were in the clinically significant range.

The mean age for sibling participants with an autism spectrum disorder was 7.50 (*SD*=2.08); 65.4% were male and 34.6% were female. All affected siblings were receiving some services within the school setting and 50% of them were receiving services outside of the school setting as well. The mean score for affected siblings on the SRS-2 was 84.15, with a range of 74 to 90. SRS-2 guidelines indicated that scores at this level suggest severe difficulties associated with autism spectrum disorder. Parent-reported cognitive levels of affected siblings varied. One affected sibling was reported to have superior intelligence and 7 of the affected siblings were reported to have above average intelligence, while 8 affected siblings were reported to have average cognitive abilities. Below-average cognitive abilities were indicated by parents of 7 affected siblings, and 3 affected siblings were reported to have impaired cognitive abilities. For the purpose of data analysis, affected siblings with superior or above average intelligence were grouped into one category (Above Average), and children with below average or impaired cognitive abilities were grouped into one category (Below Average). (See Table 1 for additional demographic information for participating families.)

Setting

Two different settings were utilized for this study: one for data collection and another setting for the intervention group. Data collection, involving assessment procedures, took place at the Utah Autism Research Program (UARP), which is a

Table 1. Demographic Characteristics of Participants

	Frequency	Percentages
Family Characteristics		
Parent Relationship		
Single Parent	1	3.8
Married, living together	19	73.1
Married, separated	1	3.8
Divorced, single	4	15.4
Divorced, remarried	1	3.8
Ethnicity of Children		
Hispanic	2	7.7
Native American	3	11.5
Caucasian	21	80.8
Family Income		
$5,000-20,000	2	7.7
$21,000-40,000	2	7.7
$41,000-60,000	10	38.5
$61,000-80,000	6	23.1
$81,000+	6	23.1
Parent Education		
High School/GED	2	7.7
Some College/Trade School	14	53.8
Graduated College	10	38.5
Characteristics of Affected Child		
ASD Diagnosis		
Autistic Disorder	14	53.8
Asperger's Disorder	9	34.6
PDD-NOS	1	3.8
High Functioning Autism	2	7.7
Language Ability		
Nonverbal	4	15.4
Phrase Speech	3	11.5
Verbally Fluent	19	73.1
Cognitive Level		
Above Average	8	30.8
Average	8	30.8
Below Average	10	38.5

University of Utah-sponsored program located in Salt Lake City, Utah. Several research projects have been conducted through UARP, which also provides intervention services for children and adults with autism spectrum disorder at this site. Study procedures involved a videotaped interaction between sibling dyads, which took place in a room equipped with a two-way mirror. Parents were allowed to view this interaction as well, while research assistants made a video recording of this interaction from behind the two-way mirror for later coding. Parents completed questionnaires in the waiting room and unaffected sibling participants completed questionnaires with research assistants in a smaller room adjacent to the waiting room.

The 7-week group intervention, Siblings Helping Siblings, was implemented at the Jordan Family Education Center (JFEC) in the Jordan School District in South Jordan, Utah in order to be easily accessible to families. The JFEC is located in a public school building and provides support services such as counseling and classes for students and their families at no cost. The intervention took place in a JFEC classroom after school hours and during summer months when school was not in session. Occasionally, the Siblings Helping Siblings group was running concurrently with other psychoeducational programs offered by JFEC; however, no participants or their family members took part in these while the group intervention took place.

Measures

This study proposed to determine whether participation in the Siblings Helping Siblings program impacts sibling functioning, including sibling knowledge of autism spectrum disorders, sibling coping strategies, and sibling relationship quality. Sibling

adjustment was also examined, as measured by parent report of externalizing and internalizing behaviors and adaptive skills. These dependent variables were measured both pre- and postintervention, and during a follow-up visit approximately 8 to 10 weeks after program completion. In addition to these measures of sibling functioning as dependent variables, consumer satisfaction and treatment fidelity were also examined. Consumer satisfaction was assessed at the conclusion of the intervention, while treatment fidelity was assessed during program implementation.

Dependent Variables

Coping Style and Use of Coping Strategies

The coping style of participants was assessed using the Children's Coping Strategies Checklist-Revision 1 (CCSC-R1; Ayers, Sanders, West, & Roosa, 1996). The CCSC-R1 is a 54-item self-report questionnaire, which utilizes a 4-point Likert scale to assess children's coping efforts (see Appendix A). Items on the CCSC-R1 were read to the participating target children, and the child indicated whether the statements were true for them "never," "sometimes," "often," or "most of the time" in how they choose to deal with problematic situations. The CCSC-R1 yields scores for 14 subscales (Cognitive Decision Making, Direct Problem Solving, Seeking Understanding, Positivity, Control, Optimism, Minimization, Distracting Actions, Physical Release of Emotions, Avoidant Actions, Repression, Wishful Thinking, Support for Actions, and Support for Feeling) and four major coping factors: Active Coping, Distraction Coping, Avoidance Coping, and Support Seeking Coping (see Table 2 for a description of each factor). Each

Table 2. Factor Descriptions for the Children's Coping Strategies Checklist-Revision 1

Factor	Description
Active Coping	Planning or thinking about ways to solve problems, efforts to improve the problem, efforts to understand the problem better. Thinking about positive aspects of the situation, optimistic thinking about the future, thinking that they can handle the situation, minimizing the problem or the consequences of the problem
Distraction Strategies	Efforts to exercise, play, or physically relax, efforts to avoid thinking about the problem situation by engaging in a distracting activity
Avoidance Strategies	Avoiding the problem by staying away or leaving the situation, efforts to stop thinking about problems, using wishful thinking or imagining the problem was better
Support Seeking Coping	Using other people as resources to seek solutions or help in the problem situation, talking with others about feelings regarding the problem situation

factor is comprised of at least two subscales. In order to obtain scores on subscales, the mean is computed by using the scores on items that contribute to that subscale. Factor scores are obtained by computing the mean of subscale scores that comprise the factor, with higher scores on subscales and factor dimensions indicating higher use of that type of coping strategy. Psychometric properties were more robust for overall factors as opposed to smaller subscales (Ayers et al., 1996), so the present study used these four factors in data analyses rather than examining each subscale separately.

Research using the CCSC-R1 indicates that this instrument has generally shown sturdy psychometric properties. Active Coping and Support Seeking Coping strategies

were two factors with robust alpha coefficients: .88 and .86, respectively (Ayers et al., 1996). Modest reliability was found for the Avoidance Strategies factor (α=.65). Reliability was not calculated for the Distraction Strategies factor, as these items were omitted by the authors of this particular study (Ayers et al., 1996).

Sibling Relationship Quality

Sibling relationship quality was assessed through questionnaires completed by parents and target children. The Sibling Inventory of Behavior (SIB; Shaefer & Edgerton, 1981) was originally developed in 1981 and has since undergone several revisions and adaptations. It is one of the earliest inventories developed to measure sibling relationship quality. The version that was used for the purposes of this study was adapted in 1999 by Hetherington, Henderson, and Reiss in order to study sibling relationships in stepfamilies. Additionally, this measure has been used to study sibling relationships when one child is affected with a disability or disorder. The SIB has been used both as a parent and self-report measure. For the purposes of this study, the SIB was used as a self-report measure that was completed by the target sibling (see Appendix B) and as a parent report measure (see Appendix C) in order to assess parent impressions of sibling relationship quality. The SIB is comprised of 32 items, with each item scored on a 5-point Likert scale. Parents responded to each item as to how often they observed the participating child engaging in each behavior. A research assistant read each item to the participating target children, who verbally indicated how often they engaged in each behavior, thought, or feeling.

Both self-report and parent report versions of the SIB yield six scales: Rivalry, Aggression, Avoidance, Involvement/Companionship, Empathy, and Teaching (see Table 3 for a more detailed description of these scales). Scores on the Rivalry, Aggression, and Avoidance scales are combined to obtain an overall Negative Involvement score. Higher scores on all scales indicate higher levels of behaviors related to each scale. One study examining psychometric properties indicated that internal consistency for all scales was over .70, with the exception of lower internal consistency on the Teaching scale (Hetherington et al., 1999). For the purposes of this study, only the Positive Involvement

Table 3. Scale Descriptions for the Sibling Inventory of Behavior (SIB)

Scale	Description
Positive Involvement	
Companionship	Positive engagement with sibling, including playing with sibling and including sibling in activities
Empathy	Showing concern, sympathy, and happiness for sibling
Teach/Manage	Helping sibling, caring for sibling, and teaching sibling new skills
Negative Involvement	
Rivalry	Shows resentment and jealousy of sibling, competitive with sibling
Aggression/Conflict	Teasing of sibling, anger toward sibling, physical aggression toward sibling
Avoidance	Ashamed of or embarrassed by sibling, avoiding sibling or being seen with sibling

and the Negative Involvement indicated that internal consistency for all scales was over .70, with the exception of lower internal consistency on the Teaching scale (Hetherington et al., 1999). For the purposes of this study, only the Positive Involvement and the Negative Involvement scale were used in data analyses, as these were composites of smaller subscales.

Sibling Interaction Quality

A study-derived observational system was used in order to examine engagement quality between sibling dyads during observations of three interaction tasks. Five-minute video clips from each of these three types of interaction tasks were coded from all three waves of data collection (preintervention, postintervention, and follow-up), resulting in nine video clips for each sibling dyad. This observation system utilized a partial interval time sampling system based on 10-second intervals. Two research assistants were used to code observational data, each of whom were graduate students in school psychology. A research assistant observed the dyad during the first 5 seconds of the interval and then used the last 5 seconds of the interval to record if the target child was Positively Engaged, Negatively Engaged, or Socially Unengaged with their affected sibling. Positive Engagement included behaviors such as positive comments, being helpful, or offering physical affection. Negative Engagement included behaviors such as physical aggression, verbal aggression, or other actions that are considered negative, such as teasing or taking/withholding objects from a sibling for reasons other than safety. Behaviors were coded as Socially Unengaged if target participants were not engaged in any activity or had no interactions with their sibling. If both positive and negative engagement were

observed during the first 5 seconds of the observation interval, the behavior was coded as to which type of engagement was predominant during the interval (see Appendix D for engagement codes and recording sheet). Research assistants completing the coding of videoed interactions were blinded as to the data collection wave from which each video clip was taken. Research assistants were trained on use of the coding systems using videoed interactions of families who had withdrawn from the study, but agreed to allow viewing of the videotapes for training purposes. Training for video coding continued until interobserver agreement exceeded 90% and Kappa coefficients were .80 or higher. A total of 10% of all videoed interactions were selected. Selection was counterbalanced so that approximately the same number of video clips were selected from each wave of data collection and from each type of interaction task. This selection of video clips was used to calculate interobserver agreement and reliability. Using Cohen's Kappa, the reliability coefficient for engagement quality was .81, with 92% interobserver agreement overall. Similar statistics were found when calculating reliability for measurement occasions. For preintervention observations, κ=.84 with 92% interobserver agreement; postintervention observations, κ=.81 with 91% interobserver agreement; follow-up observations, κ=.77 with 92% interobserver agreement. Good reliability was also established across observational tasks. The reliability coefficient for unstructured observations was .81, with 92% interobserver agreement; observations of puzzle tasks, κ=.80 with 90% interobserver agreement; observations of problem-solving tasks, κ=.77 with 93% interobserver agreement. These statistics represent good reliability between raters and high agreement.

Sibling Adjustment

As a measure of sibling adjustment, the Behavior Assessment System for Children, Second Edition: Parent Rating Scales (BASC-2, PRS; Reynolds & Kamphaus, 2004) was used to assess parent reports of the participating target siblings' levels of internalizing and externalizing behaviors as well as their adaptive skills. The BASC-2 is a standardized rating scale commonly used both in research as well as clinical practice. It is a broadband measure used to assess a variety of behavioral and emotional difficulties in childhood and adolescence. The BASC-2 utilizes a 4-point Likert scale response system that takes between 10 to 20 minutes to complete. The versions that were used for this study can be administered to parents of children between the ages of 6 and 11 years old and to parents of children between ages of 12 and 21. The BASC-2 measures several narrow-band clinical domains; however, for the purposes of this study, only composite scores were used as outcome measures. The Externalizing Problems composite scale is comprised of behaviors that are typically characterized as disruptive, such as physical and verbal aggression, hyperactivity, and rule-breaking behaviors. The Internalizing Problems composite scale is comprised of items related to the narrow band clinical scales of Anxiety, Depression, and Somatization. The Adaptive Skills composite was also examined as an outcome variable. Reynolds and Kamphaus (2004) indicated that behaviors assessed in the area of adaptive skills can indicate risk, because items address skills that are necessary for success in home, school, and community environments.

The BASC-2 Parent Rating Scale (PRS) was normed using a large nationwide sample (n=1,800), which closely mirrored the U.S. population in 2001 on variables such as parent education, race/ethnicity, geographic region, and special education

classification. Internal consistency on the BASC-2 PRS for Externalizing Problems, Internalizing Problems, and Adaptive Skills is high (alpha=.94, .90, and .95, respectively). Test-retest reliability was found to be high for Externalizing Problems (.91) and Adaptive Skills (.92), but was somewhat lower for Internalizing problems (.77) (Reynolds & Kamphaus, 2004).

Knowledge and Understanding of Autism Spectrum Disorders

Knowledge of autism spectrum disorders was assessed using the Knowledge of Autism/Asperger Syndrome scale (KAAS; Ross & Cuskelly, 2006). The KAAS is an unpublished measure (see Appendix E) that was constructed as a part of a research study on siblings of children with autism spectrum disorder in Australia in order to measure participants' knowledge of autism spectrum disorders. Two versions were developed: one for siblings of children with autism and one for siblings of children with Asperger's Disorder; however, only the autism version of this measure was used for this study. The original version of the scale consists of 21 statements with response options of "true" or "false." The authors constructed the scale based on criteria provided in the Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition (American Psychiatric Association, 1994). Items also address other aspects of autism spectrum disorders, including etiology, course, and prevalence, as well as associated features. The authors of this measure reported that internal consistency was measured using Cronbach's alpha, with an alpha of .67 being reported for the Asperger's questionnaire. Low participant numbers prevented alpha calculations for the Autism version of the questionnaire (Ross & Cuskelly, 2006).

After review of this measure by a licensed psychologist who specializes in autism spectrum disorders, one item related to prevalence of autism (Item 6: "Not many people have autism in the world - it is quite rare") was removed. This decision was made due to recent surveillance studies indicating increasing prevalence of the disorder since the time this measure was created. The resulting measure that was used in this study consisted of 20 items. Items were read aloud to target siblings, who then indicated if they believed the statement was either true or false. Each item that was correct earned one point, and higher scores indicated greater knowledge of autism spectrum disorders.

Social Validity

Two study-derived questionnaires were used for the purposes of assessing parent and child satisfaction with the Siblings Helping Siblings intervention (see Appendices F and G). Parents and the target child participants completed these questionnaires along with the other questionnaires completed at the postintervention data collection appointment. These questionnaires address both satisfaction with and feasibility of the group intervention, Siblings Helping Siblings. Furthermore, the questionnaires addressed impressions of the intervention's impact on sibling knowledge of autism spectrum disorders, sibling relationship quality, and sibling coping skills. Questions also addressed whether parents and target child participants thought that the goals of the Siblings Helping Siblings program were met.

Demographic and Background Information

Parents of participants completed a questionnaire (see Appendix H) designed to obtain relevant background information for the family, as well as information regarding both affected and unaffected siblings in order to determine if these factors impacted the effectiveness of the Siblings Helping Siblings program. Examples of the information requested include marital status, size of family, family income, and parent education level, as well as gender, age, and ethnicity of both affected and unaffected siblings.

Treatment Integrity

A checklist was developed by the principal investigator and was used in order to determine that group leaders were implementing the intervention as intended (see Appendix I). The checklist included the individual components of each lesson, as well as the intended goals of the Siblings Helping Siblings program. At the end of each session, the group leader completed the checklist. The Siblings Helping Siblings program was completed with 100% integrity as measured by treatment fidelity checklists.

Procedures

Participant Recruitment

Following approval from the University of Utah Institutional Review Board, the Jordan School District Institutional Review Board, and the Canyons School District Institutional Review Board, flyers (see Appendix J) containing information about the Siblings Helping Siblings group and the study, as well as contact information, were distributed using several methods. First, paper flyers were delivered to schools within the

Jordan School District and the Canyons School District by hand or through interdistrict mail systems. Recipients of these flyers included school psychologists, special education teachers, as well as speech language pathologists. These staff members were encouraged to display flyers as well as to distribute to families who may have had an interest in participating in this study. In addition to recruitment within these two school districts, flyers were also distributed via electronic mail to individuals belonging to a network of providers (URLEND) who work with children with special health care needs and their families. Providers in this network included the following professions, among others: physicians, speech language pathologists, audiologists, occupational therapists, and psychologists. Interested families who responded to the flyer were contacted via telephone and asked several brief screening questions in order to determine that the sibling pair met criteria for participation in the study (see Appendix K for screening sheet and inclusion criteria).

Once it was determined that families met criteria for participation, families were given information on anticipated start dates of groups, and an appointment was made for the family to undergo preintervention data collection procedures. It was anticipated that participants would be matched according to participant age, gender, and severity of their sibling's disability based on parent report, and then randomly placed into one of two groups in Condition 1 (primary experimental group) or one of two groups in Condition 2 (wait list control groups). However, due to low enrollment at the onset of this study, intervention groups were initiated when a minimum of 4 families were recruited for a particular group in order to keep families from having to wait an indefinite time period.

Six intervention groups were conducted, with the number of participants in each group ranging from 4 to 6 children.

Outcome Measures

Data collection occurred in three waves for all participants, and each participant underwent identical data collection procedures regardless of his or her group assignment. Data collection procedures were completed by the principal investigator and research assistants, who were doctoral students enrolled in a school psychology program. The first wave of data collection occurred within the first 2 weeks prior to the start of the intervention group. Postintervention data were collected within the 2 weeks following intervention completion. The third and final wave of data collection occurred for participants 8 to 10 weeks following their completion of the intervention. Before undergoing any study procedures, informed consent and permission was obtained from parent participants. Informed assent was also obtained from both primary and secondary participating siblings. Data collection sessions included two components: direct observation of sibling dyadic interactions, followed by questionnaire completion. All direct observations were viewed and video recorded from behind a two-way mirror in order to reduce any reactivity bias the presence of a camera or videographer might cause. For each wave of data collection, direct observations included three types of tasks: unstructured play, puzzle construction, and a problem-solving task. Unstructured play and puzzle construction tasks were identical for all three waves of data collection, while the problem-solving task changed depending on whether participants were undergoing procedures for preintervention, postintervention, or follow-up.

The unstructured play task was designed to allow study participants to adjust to their surroundings. This unstructured play was also a way to capture the quality of sibling interactions when there were no task objectives to accomplish or specific instructions to play or work together. To initiate the unstructured play interaction, the sibling dyad accompanied a researcher to the observation room where several toys and games were already present. These toys were identical for all three waves of data collection, and included a crate of plastic balls, foam letters, interlocking blocks, several children's books, hopscotch, Hungry Hungry Hippos, Molehill Mania, and Chutes and Ladders. Before exiting the room, a researcher instructed the sibling pair to play as they wished with the available toys and games until the researcher returned with a new task. After 6 to 8 minutes, the researcher re-entered the room and removed all the toys and games. Following toy removal, the puzzle construction task was introduced by placing a bowl of Tangram pieces along with several puzzle forms in front of the sibling pair. This task was included to provide each sibling pair with a structured task, as well as a goal they could accomplish through problem solving and cooperation. Researchers instructed the pair to work together to complete as many puzzles as possible before the researcher returned with the next task. After 6 to 8 minutes, the researcher returned and removed the puzzle construction materials before introducing the problem-solving tasks.

Problem-solving tasks were designed to include goals that would be difficult to complete easily, thus requiring problem-solving skills and providing opportunities for sibling cooperation. These tasks were changed for each wave of data collection in order to ensure that the participants would have to identify novel problem-solving strategies to complete the task objective. Changing tasks during each wave also ensured that

successful problem-solving strategies used in previous tasks did not carry over to subsequent tasks. For the preintervention problem-solving task, materials for the participants included a remote control vehicle, one nonfunctional remote, and 10 small towers. To introduce this task, the researcher instructed the siblings to stay seated while she set up the task. The towers were placed randomly on the floor while the vehicle and the nonfunctioning remote were set on a table. The researcher instructed the sibling dyad that they had to work together to find the best way to knock down all of the towers using the remote control vehicle. The researcher instructed the dyad to begin the task after they heard her say "go." Siblings were instructed to set up the towers and play again if they accomplished the task before the researcher returned. During this task, the sibling dyad used the nonfunctional remote, while the movement of the vehicle was actually controlled by a researcher from behind the two-way mirror. Researcher control of the remote allowed for more problem-solving opportunities for the sibling dyad to encounter. Often the vehicle did not move as the participants expected it to, or the vehicle became stuck. Researcher control of the vehicle ensured that these types of barriers to task completion would occur. After 6 to 8 minutes, the researcher returned to signal the end of the task. The researcher then escorted the sibling with an autism spectrum disorder to the waiting room and accompanied the unaffected sibling to a smaller evaluation room to complete study questionnaires.

For the postintervention problem-solving task, materials included three hard plastic bowls and a crate of plastic balls. Several other materials, such as blocks, cotton, small beanbags, and a bag of dice were also included and could have been used to assist in task completion. The sibling dyad was asked to stay seated while the researcher set up

the task and while task objectives were explained. The plastic bowls were set on one side of the room, while the crate of balls was placed on the opposite side of the room behind a line taped to the floor. The additional materials were also placed in the room; however, no explicit references or explanations regarding these materials were made. Sibling dyads were instructed to work together to find the best way to get as many balls in the bowls as possible before the researcher returned to the room. They also were instructed that if someone were throwing the balls, they must remain behind the taped line. After 6 to 8 minutes elapsed, the researcher returned to signal the end of the task. The researcher then escorted the sibling affected with an autism spectrum disorder to the waiting room, and accompanied the unaffected sibling to another room where sibling questionnaires were completed.

The problem-solving task that was presented during the follow-up appointment included the following materials: large foam noodles that had been cut lengthwise to varying lengths, balls of different weights and sizes, and five foam towers of varying heights. The sibling dyad was asked to stay seated while the researcher set up the task and task objectives were explained. The researcher set up the foam towers on one side of the room and placed the other materials on the opposite side of the room behind a line taped to the floor. The sibling dyad was instructed to work together to find the best way to use the materials to knock down the towers. The researcher demonstrated one way this could be done, but also stated there were many ways to complete this task. The researcher also told the sibling pair that the person shooting the balls must remain behind the taped line when throwing balls. The sibling pair was instructed to set up the task and play again if they accomplished the task before the researcher returned. After 6 to 8 minutes, the

researcher returned to signal the end of the task. The researcher then escorted the sibling affected with autism spectrum disorder to the waiting room and accompanied the unaffected sibling to a smaller evaluation room to complete study questionnaires.

Research assistants read all questionnaires aloud to target child participants, who indicated their responses verbally and researchers recorded their responses. Parent questionnaires were handed to parent participants at the onset of each appointment for them to complete in the waiting room. Parents were encouraged to voice any concerns or questions regarding the questionnaires, but otherwise completed questionnaires independently. At the end of the follow-up data collection appointment, families received a $30 gift certificate as compensation for their time and participation in this study.

Seven-week Psychoeducational Intervention

The Siblings Helping Siblings intervention program was partially based on the Sibshop model (Meyer & Vedasy, 2008) and was designed for elementary-aged students who have siblings with autism spectrum disorders. Several psychoeducational components were added that are unique to the Siblings Helping Siblings program. Specifically, lessons were presented each week that addressed coping skills, problem-solving skills, and knowledge of autism spectrum disorders. Components of this program included several recreationally-based activities, as well as activities designed to facilitate discussion between participants and the group leaders. In addition to recreational games and discussions, lessons on various topics were presented during each session, which were designed to support the objectives identified for that session. (See Table 4 for descriptions of these objectives.) All sessions were lead by the principal investigator and

Table 4. Siblings Helping Siblings Objectives by Session

Session Number/Title	Goals/Objectives
1. All About You	Objective 1: Establish rapport with and between participants.
2. Strengths and Challenges	Objective 1: Children will identify their own strengths and challenges as well as those of their siblings. Objective 2: Children will learn about autism spectrum disorders and how these disorders impact individuals in several ways.
3. Emotional Identification and I-messages	Objective 1: Children will discuss different emotions, what causes them, and their own experiences with emotions. Objective 2: Children will practice sharing these emotions by using I messages.
4. Connecting Thoughts to Feelings and Relaxation Techniques	Objective 1: Children will learn how thoughts can impact feelings and how feelings then impact actions. Objective 2: Children will learn and practice relaxation techniques in order to help manage negative feelings.
5. Thinking Errors and Positive Thinking	Objective 1: Children will identify negative thinking errors and identify ways of stopping automatic negative thoughts. Objective 2: Children will learn techniques such as positive reframing to combat negative thoughts.
6. Problem Solving	Objective 1: Children will learn and identify problem-solving steps, including identifying the problem, thinking about multiple solutions, and choosing the best solution. Objective 2: Children will analyze possible solutions to several problems.
7. Wrap Up	Objective 1: Previous lessons will be reviewed. Children will identify potential ways of dealing with situations when presented with vignettes. They will discuss ways they could apply what they have learned to their own life. Objective 2: Children will discuss the group, including what they enjoyed and disliked, as well as what they learned from Siblings Helping Siblings.

a co-leader. Co-leaders of the group were graduate students in a school psychology program, licensed school psychologists, or speech-language pathologists. All sessions provided structured activities in which participants engaged. Participants were also given weekly homework assignments to complete with the help of a parent (see Appendix L for sample homework assignment). These assignments contained information about lessons presented in the group and an activity that was to be completed with a parent to help illustrate the lessons and support skills learned in these lessons. The program was 7 weeks in duration, and each session was 120 minutes in length (see Appendix M for sample session).

Design and Data Analyses

In this study, outcome variables were measured on three different occasions and this study sought to analyze change in variable scores between preintervention and subsequent measurement occasions; therefore, a repeated measures design was used. The data collected for this study were nested. Specifically, measurement occasion was nested within individuals, and individuals were nested within their respective intervention groups. A preliminary analysis using hierarchical linear modeling was conducted to test for any random effects between groups on outcome measures. Analyses using repeated measure ANOVAs were used to answer the proposed research questions. In order to answer research questions regarding consumer satisfaction, descriptive statistics were used and interpreted anecdotally.

CHAPTER 3

RESULTS

Preliminary Analysis

Given that measurement occasion was nested within individuals and that these individuals were nested within groups, a preliminary analysis using hierarchical linear modeling was conducted to test for any random effects between treatment groups on outcome measures over time. No significant random effects were found for any of the variables used in the current study; therefore, Repeated Measure Analysis of Variance and Analysis of Covariance were used.

Preliminary analyses also were conducted to determine if there were any significant differences between the families who withdrew (n=4) and the families who completed the study (n=26). Although a total of 6 families withdrew, 2 families withdrew before preintervention questionnaires were completed. T-tests were conducted to compare means of variables obtained during the first wave of data collection. No significant differences were found between groups.

Confirmatory Analyses

A Repeated Measures Analysis of Variance (ANOVA) and a Repeated Measures Analysis of Covariance (ANCOVA) were conducted for all outcome variables. Helmert contrasts were used to compare scores at preintervention to scores at postintervention and follow-up. Helmert contrasts were also used to examine maintenance effects by comparing scores at postintervention to scores at follow-up. Tests for interaction effects involving participant variables and measurement occasion were conducted to determine if statistically significant changes occurred over time and to determine whether the specific participant variables of sex of target child, diagnostic status of target child, or cognitive level of the sibling with autism spectrum disorder moderated the effects of time. Partial eta squared was also calculated and used as a measure of effect size. Results are presented below for each of the primary outcome variables: coping skills, sibling relationship quality, and quality of sibling interaction, along with consumer satisfaction for parents and target children.

Research Question #1

Does participation in the Siblings Helping Siblings program change child-reported use of coping strategies in siblings of children with autism spectrum disorders?

Target children's coping strategies as measured by the CCSC-R were analyzed to determine if statistically significant changes occurred over time and to determine if sex of the target child, diagnostic status of the target child, or cognitive level of the sibling with autism spectrum disorder moderated these effects. (Means and standard deviations for the four domains of coping strategies are presented in Table 5.) When comparing scores

Table 5. Means(Standard Deviations) for Coping Strategies

		Active	Distraction	Avoidance	Support Seeking
Time	Pre	2.15(.59)	2.05(.60)	2.61(.49)[b]	2.08(.73)
	Post	2.17(.55)	2.02(.42)	2.64(.52)	2.04(.76)
	Follow	2.05(.58)	2.00(.56)	2.43(.51)	1.96(.75)
Male	Pre	2.33(.66)[a]	2.16(.66)	2.60(.56)	2.17(.76)
	Post	2.20(.56)	1.98(.44)	2.65(.49)	1.96(.67)
	Follow	2.18(.63)	1.94(.50)	2.40(.62)	1.96(.68)
Female	Pre	1.93(.41)	2.05(.60)	2.62(.49)	1.98(.73)
	Post	2.14(.57)	2.02(.42)	2.63(.59)	2.14(.87)
	Follow	1.90(.51)	2.05(.65)	2.47(.38)	1.96(.85)

Note: Mean(*SD*)[a] denotes statistically significant effect from preintervention compared to postintervention and follow-up. Mean(*SD*)[b] denotes statistically significant effect from postintervention compared to follow-up. For example, for Active Coping, there was no main effect of time; however, there was a significant interaction effect for sex of target from preintervention to later intervention, which is denoted by [a]. For Avoidance Strategies, there was a significant effect for time from postintervention to follow-up, which is denoted by [b]. No other significant effects were detected for Avoidance Strategies.

at preintervention to subsequent measurement occasions, there was no significant main effect of time on child reported use of Active Coping strategies, $F(1,24)=.28$, $p=.60$. Notably, child-reported Active Coping scores differed over time between male and female target children when comparing preintervention scores to subsequent measurement occasions, $F(1, 24)=6.03$, $p=.02$. This interaction effect is depicted in Figure 1, which also reflects differences between male and female target children in their reported use of Active Coping at preintervention and at follow-up. Overall, female target children reported an increase in use of coping strategies, while male target children tended to report a slight decrease in use of active coping strategies from preintervention to postintervention. There was no significant interaction effect found from preintervention to later measurements for cognitive level or for diagnostic status of target child.

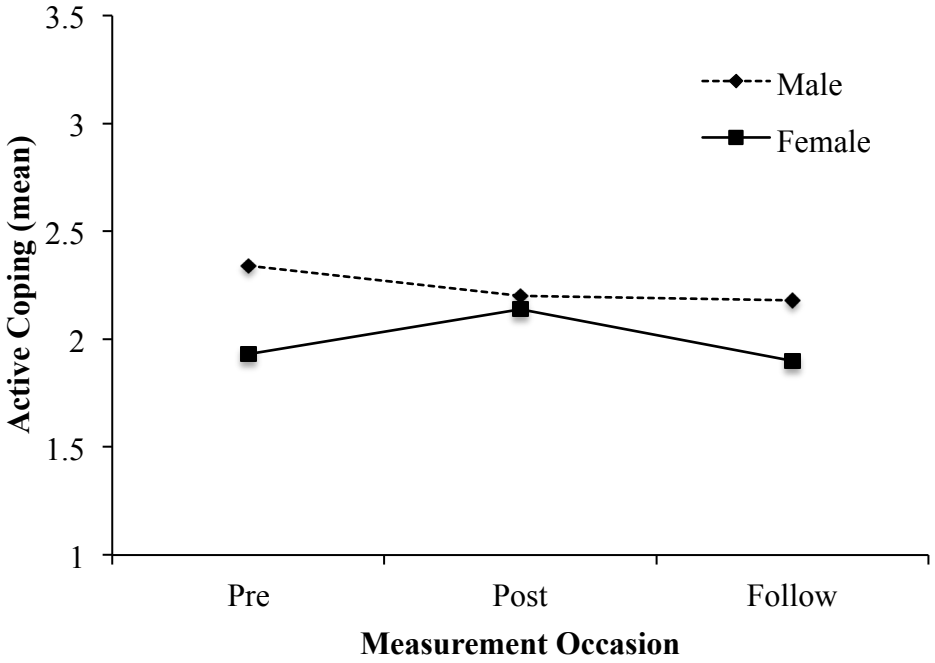

Figure 1. Mean scores for Active Coping. Interaction between time and sex of target

There was no significant main effect for time on child-reported use of Distraction Strategies $F(1,25)=.23$, $p=.63$. Effects of occasion on child-reported use of Distraction Strategies were not moderated by sex or diagnostic status of target child or affected siblings' cognitive level. Likewise, no interaction effects were detected.

No main effect of time was found for child-reported Support Seeking Coping from preintervention to subsequent measurement occasions, $F(1,25)=.39$, $p=.54$. Effects of occasion on child-reported use of Distraction Strategies were not moderated by sex or diagnostic status of target child or affected siblings' cognitive level. Likewise, no interaction effects were detected.

Avoidance Strategies showed no significant main effect for time from preintervention to later measurement occasions, $F(1,25)=.74$, $p=.40$. Effects of occasion were not moderated by sex or diagnostic status of target child or by affected siblings' cognitive level. No interaction effect was detected between time and sex or diagnostic status of target child for Avoidance Strategies or for cognitive level of affected sibling for Avoidance Strategies.

Research Question #2

Are any significant changes in child-reported use of coping strategies maintained 8 to 10 weeks following program completion?

There was a statistically significant decrease in child reported Active Coping on the CCSC-R from postintervention to follow-up, $F(1,24)=4.95$, $p=.04$. This effect was moderated by the sex of the target child and time accounted for 17% of the variance in Active Coping from postintervention to follow-up. When analyzing scores from postintervention to follow-up, no significant interaction effects for cognitive level of the affected sibling or for diagnostic status of the target child were noted. Effects of occasion on child-reported use of target strategies were not moderated by cognitive level of the affected sibling or by diagnostic status of target child.

There was no significant change in scores in child-reported use of Distraction Strategies from postintervention to follow-up, $F(1,25)=.20$, $p=.66$. When comparing Distraction Strategies scores from postintervention to follow-up, there were no significant interactions detected for sex of target child, cognitive level of affected sibling, or diagnostic status of target child. No moderation effects were detected.

No significant changes in scores occurred from postintervention to follow-up for Support Seeking Coping, F=.90, p=.35. No interaction or moderation effects were detected for sex or diagnostic status of target child or the affected siblings' cognitive level on child-reported use of Support Seeking Coping.

There was a significant decrease in child reported use of Avoidance Strategies from postintervention to follow-up, $F(1,25)$=6.18, p=.02. Time accounted for 20% of the observed variance of Avoidance Strategies in this case. Effects of occasion on child-reported use of Avoidance Strategies were not moderated by sex or diagnostic status of target or affected siblings' cognitive level. No interaction effects were detected.

Research Question #3

Does participation in the Siblings Helping Siblings program improve parent and/or child reports of sibling relationship quality among dyads of participants and their siblings affected by autism spectrum disorder?

In order to determine if participation in Siblings Helping Siblings impacted sibling relationship quality, parent and target child scores on the overall Negative Involvement and Positive Involvement scales of the Sibling Inventory of Behavior were analyzed. Means and standard deviations for both parent and child ratings of Positive Involvement and Negative Involvement are presented in Table 6. There was a significant main effect of time on parent-reported Positive Involvement, which was moderated by target child's sex, $F(1,24)$=11.31, p=.00. In this case, time, moderated by target child's sex, accounted for 32% of the observed variance. There was also a significant interaction effect, indicating that change in parent-reported Positive Involvement differed for male

Table 6. Means(Standard Deviations) for Quality of Sibling Relationship as Measured by the Sibling Inventory of Behavior

		Involvement: Parent Report		Involvement: Child Report	
		Positive	Negative	Positive	Negative
Time	Pre	41.38(7.80)[a]	52.85(10.92)[a]	43.58(8.90)	43.88(10.09)[b]
	Post	45.04(9.48)	45.42(10.65)	44.15(11.36)	43.50(10.10)
	Follow	46.46(11.24)	44.46(10.24)	47.04(10.39)	41.31(9.79)
Male	Pre	40.79(7.84)[ab]	53.79(11.21)	46.00(8.37)	43.93(9.62)
	Post	47.79(5.89)	42.86(11.22)	47.21(10.64)	44.14(8.25)
	Follow	48.71(11.60)	43.29(10.93)	49.93(10.51)	42.29(7.31)
Female	Pre	42.08(8.05)	51.75(10.96)	40.75(9.01)	43.83(11.04)
	Post	41.83(11.93)	48.42(9.54)	40.58(11.56)	42.75(12.25)
	Follow	43.83(10.68)	45.83(9.67)	43.67(9.58)	40.17(12.32)
No Dx	Pre	41.35(6.12)	53.88(8.96)	45.41(9.53)	45.82(9.88)[ab]
	Post	45.59(7.67)	46.53(8.87)	45.53(11.05)	42.12(8.37)
	Follow	45.88(7.89)	45.47(7.80)	48.24(7.73)	42.29(8.87)
Dx	Pre	41.44(10.74)	53.85(10.92)	40.11(6.74)	40.22(9.99)
	Post	44.00(12.69)	45.42(10.65)	41.56(12.16)	46.11(12.91)
	Follow	47.56(16.37)	42.56(14.14)	44.78(14.45)	39.44(11.65)

Note: Mean(*SD*)[a] denotes statistically significant effect from preintervention compared to postintervention and follow-up. Mean(*SD*)[b] denotes statistically significant effect from postintervention compared to follow-up.

and female target children from preintervention to later measurement occasions, $F(1,24)=7.55$, $p=.01$. This interaction effect accounted for 24% of the variance in scores from preintervention compared to scores obtained after intervention. This interaction effect is depicted in Figure 2, which indicates that parent ratings of Positive Involvement were similar for both male and female target children prior to participation in the intervention, but differed significantly at both postintervention and follow-up measurement occasions. It appears that parent ratings of Positive Involvement increased

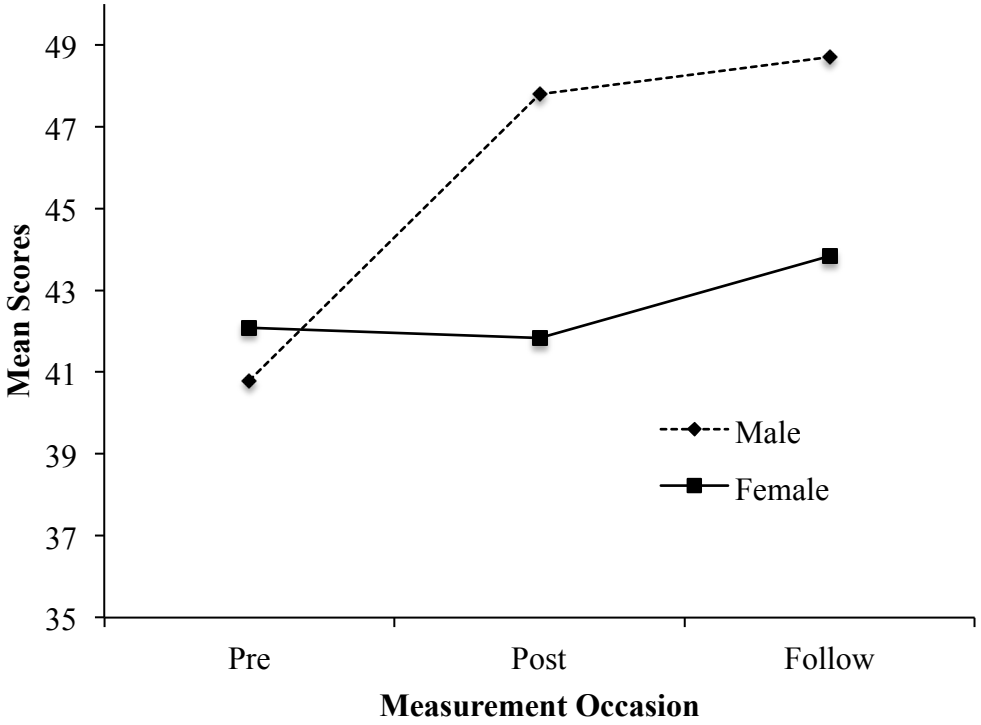

Figure 2. Mean scores for parent-reported positive involvement. Interaction between time and sex of target child.

for male target children, while they remained generally static for female target children. Interaction effects or moderation effects for diagnostic status of the target child and cognitive level of the affected sibling were not found on parent-reported Positive Involvement from preintervention to subsequent measurement occasions.

While significant change in parent-reported Positive Involvement was found, there was no significant effect for time on child-reported Positive Involvement from preintervention to subsequent measurement occasions, $F(1,25)= 1.14$, $p=.30$. Effects of occasion on child-reported Positive Involvement were not moderated by sex or diagnostic status of the target child or the affected child's cognitive level. No interaction effects were detected.

When analyzing parent ratings of Negative Involvement, there was a main effect for time when comparing scores from preintervention to later measurement occasions, $F(1,25)=21.64$, $p=.00$. This effect represents a statistically significant decrease in parent-reported Negative Involvement, and time accounted for 46% of the variance. Effects of occasion on parent-reported Negative Involvement were not moderated by sex or diagnostic status of the target child or by the affected sibling's cognitive level. No interaction effects were detected.

When comparing child-reported Negative Involvement from preintervention to later measurement occasions, there was no significant main effect of time, $F(1,24)=.26$, $p=.62$. No interaction or moderating effects were found for sex of target child or for cognitive level of affected siblings on child-reported Negative Involvement.

Research Question #4

Are any improvements in parent and/or child reports of sibling relationship quality maintained 8 to 10 weeks following program completion?

The effects detected in parent-reported Positive Involvement were maintained over time, as there was no main effect for time on parent-reported Positive Involvement between siblings when comparing scores at postintervention to follow-up, $F(1,24)=.85$, $p=.37$. Effects of occasion were not moderated by sex or diagnostic status of target child or by affected sibling cognitive level. No interactions effects were detected between time and these variables for parent-reported positive involvement when comparing postintervention scores to follow-up scores.

There were no significant changes in child reports of Positive Involvement from postintervention to follow-up, $F(1,25)=2.38$, $p=.14$. Effects of occasion were not moderated by sex or diagnostic status of target child or by affected sibling cognitive level. No interactions effects were detected between time and these variables for parent-reported positive involvement when comparing postintervention scores to follow-up scores.

There was no significant effect for time when comparing parent-reported Negative Involvement at postintervention to follow-up, $F(1,25)=.32$, $p=.58$, indicating that the effects detected from preintervention to subsequent measurement occasions were maintained over time. Effects of occasion were not moderated by sex or diagnostic status of target child or by affected sibling cognitive level. No interactions effects were detected between time and these variables for parent-reported negative involvement when comparing postintervention scores to follow-up scores.

There was a significant effect for time when comparing child-reported Negative Involvement scores from postintervention to follow-up, with diagnostic status of the target child moderating this effect, $F(1,24)=9.09$, $p=.01$. This effect represents a statistically significant decrease in child reports of Negative Involvement with time, moderated by diagnostic status, accounting for 28% of the variance. There also was a significant interaction effect between time and diagnostic status of target children for child-reported negative involvement (see Figure 3). Changes in child-reported Negative Involvement from preintervention to later measurement occasions differed between target children who had a diagnosis (e.g., ADHD, internalizing disorder) and those target children who had no known disability, $F(1,24)=8.61$, $p=.01$. Child-reported Negative

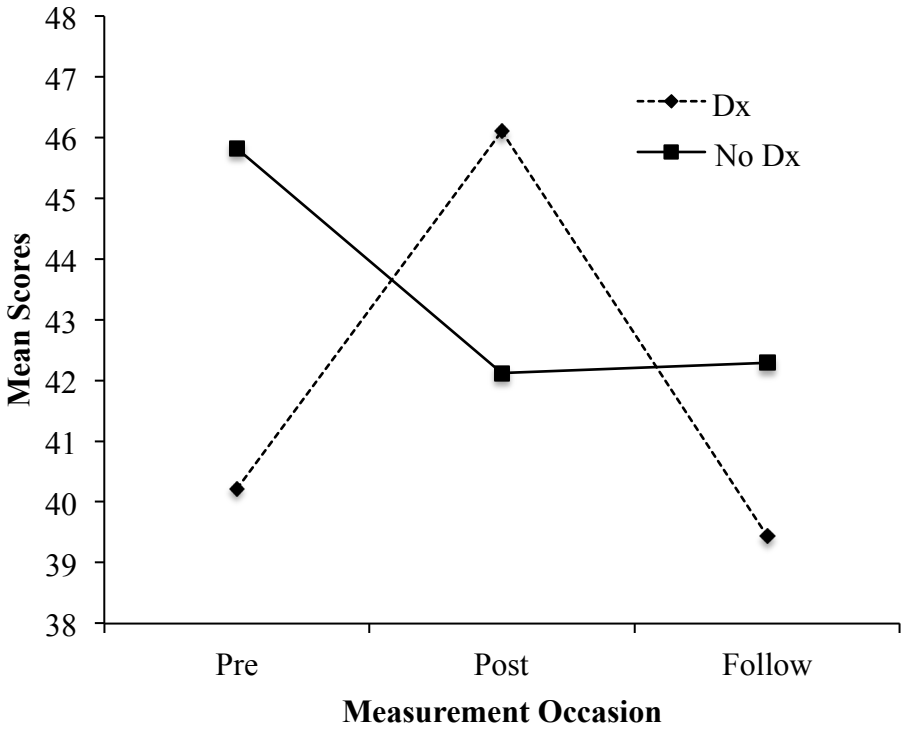

Figure 3. Mean scores for child-reported negative involvement. Interaction between time and diagnostic status of target.

Involvement scores also differed based on diagnostic status when comparing scores at postintervention to follow-up, $F(1,24)=10.11$, $p=.00$. The interaction of time and disability status accounted for 26% of the variance between preintervention scores and later scores, and accounted for 30% of the variance between postintervention and follow-up. Figure 3 shows this interaction effect and suggests that child-reported Negative Involvement differed at preintervention, with children without a diagnosis providing higher ratings of Negative Involvement than children with diagnoses. Target children who had no mental health diagnoses tended to give lower ratings of Negative Involvement at posttreatment, while children with diagnoses tended to give higher ratings

on Negative Involvement relative to their previous ratings. Ratings did not appear to change at follow-up for target children without disabilities, while ratings of target children with diagnoses decreased from postintervention to follow-up, but not significantly lower than preintervention levels. No interaction effects or moderation effects were detected for child-reported Negative Involvement from postintervention to follow-up for sex of target child or for cognitive level of sibling affected with autism spectrum disorder.

Research Question #5

Does participation in the Siblings Helping Siblings program improve observed sibling interaction quality between dyads of participants and their siblings affected by autism spectrum disorder?

Interaction quality was measured by coding 5-minute video clips of sibling dyads engaged in three types of interaction tasks: unstructured, puzzle construction, and problem solving. Percentages of time spent positively engaged, negatively engaged, or unengaged were calculated for each of these tasks using direct observation codes. These scores were analyzed to determine if changes occurred in engagement during each of these three types of interaction tasks from preintervention to subsequent measurement occasions as well as to determine if any significant changes occurred from postintervention to follow-up. Analyses were also conducted to determine if there were any significant moderating variables or interaction effects. Means and standard deviations are presented in Table 7.

Table 7. Means(Standard Deviations) for Interaction Quality during Observations

		Unstructured Interaction		
		Positive	Negative	Unengaged
Time	Pre	53.54(35.35)[a]	.77(3.92)	45.65(34.39)[a]
	Post	72.58(30.17)	1.23(5.69)	26.12(30.02)
	Follow	66.58(32.02)	.38(1.47)	33.08(31.95)
		Puzzle Construction		
		Positive	Negative	Unengaged
Male	Pre	59.82(33.11)[b]	.21(.80)	40.00(32.92)
	Post	61.79(30.77)	1.07(3.25)	36.36(25.48)
	Follow	74.00(25.48)	.00(.00)	26.00(25.48)
Female	Pre	75.67(22.11)	2.00(5.14)	22.33(22.11)
	Post	78.00(24.19)	.25(.87)	21.75(24.00)
	Follow	71.08(22.04)	.00(.00)	28.92(22.04)
		Problem Solving		
		Positive	Negative	Unengaged
Male	Pre	81.57(23.53)[a]	.21(.80)	18.14(23.39)[a]
	Post	88.21(18.69)	.58(1.38)	9.57(14.81)
	Follow	87.64(20.23)	2.50(9.35)	9.86(19.36)
Female	Pre	92.42(14.26)	.25(.87)	7.33(14.11)
	Post	92.58(13.46)	.58(1.38)	7.75(13.41)
	Follow	76.33(24.78)	2.83(7.87)	20.83(24.84)
No Dx	Pre	84.82(23.09)	.00(.00)[a]	15.16(23.81)
	Post	93.53(12.88)	.88(2.18)	6.24(12.96)
	Follow	83.59(22.67)	.41(1.70)	16.00(22.91)
Dx	Pre	89.89(13.78)	.67(1.32)	9.33(12.89)
	Post	84.00(20.83)	2.56(6.62)	13.44(15.24)
	Follow	80.22(24.01)	6.89(13.82)	12.89(22.31)

Note: Mean(*SD*)[a] denotes statistically significant effect from preintervention compared to postintervention and follow-up. Mean(*SD*)[b] denotes statistically significant effect from postintervention compared to follow-up.

Positive Engagement

There was a significant main effect for time on positive engagement of dyads during unstructured interactions from preintervention to postintervention and follow-up, $F(1,25)=6.91$, $p=.01$. This effect represented a statistically significant increase in percentage of time spent positively engaged during unstructured interactions, with time accounting for 22% of the observed variance. Effects of occasion on positive engagement during unstructured interactions were not moderated by sex or diagnostic status of target child or affected sibling's cognitive level, nor were there interaction effects between time and these variables.

When examining positive engagement scores during the puzzle construction task, there was no main effect of time from preintervention to later measurement occasions, $F(1,24)=.46$, $p=.50$. Effects of occasion on positive engagement during puzzle construction tasks were not moderated by sex or diagnostic status of target child or affected sibling's cognitive level, nor were there interaction effects between time and these variables.

For positive engagement during problem-solving tasks, there was no main effect of time when comparing preintervention scores to later scores, $F(1,24)=.07$, $p=.79$. Again, there was significant interaction between time and sex of target child. Changes from preintervention to later measurement in positive engagement during problem-solving tasks differed between male and female target children, $F(1,24)=5.68$, $p=.03$. This effect is depicted in Figure 4 and shows that again, positive engagement differed for male and female target children during problem-solving tasks, particularly during the

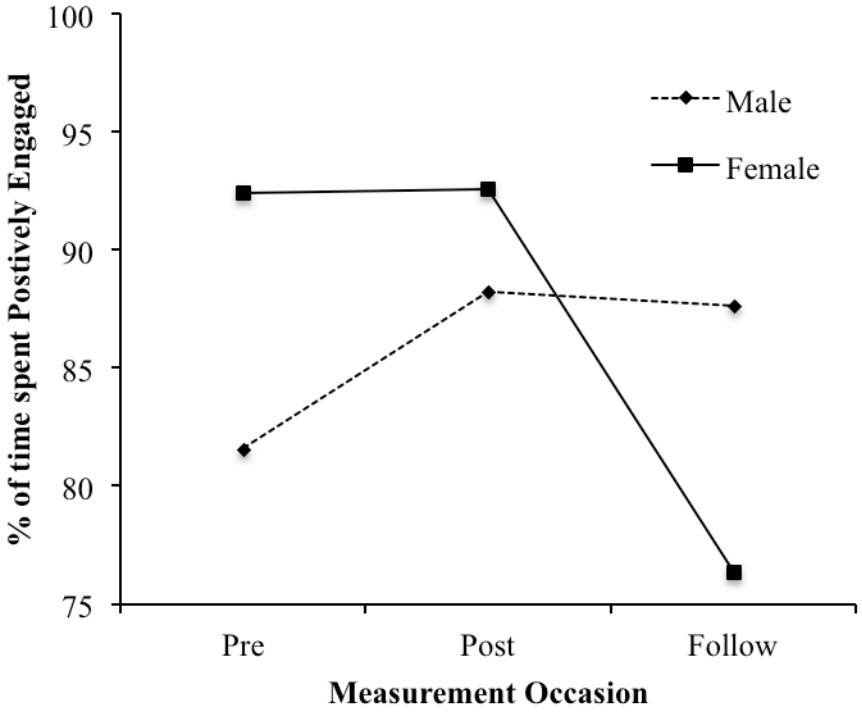

Figure 4. Mean percentage of time spent positively engaged during problem-solving tasks. Interaction between time and sex of target.

preintervention measurement occasion. This level of positive engagement at preintervention appeared to be maintained for female participants at postintervention. Figure 4 does illustrate a decrease in positive engagement for female target children during the follow-up problem-solving task. For male target children, positive engagement tended to increase from preintervention to postintervention and this increase appears to have been maintained from postintervention to follow-up. No interaction effects were detected from preintervention to later measurement occasions for positive engagement during the problem-solving task for cognitive level of siblings affected with autism spectrum disorder or for diagnostic status of target children.

Negative Engagement

When examining negative engagement of dyads during unstructured tasks, there was no main effect of time when comparing scores from preintervention to later measurement occasions, $F(1,25)=.11$, $p=.74$. Effects of occasion on negative engagement during unstructured interactions were not moderated by sex or diagnostic status of target child or affected sibling's cognitive level, nor were there interaction effects between time and these variables.

Similar results were obtained when analyzing rates of negative engagement during puzzle construction tasks. There was no main effect of time from preintervention to later measurement occasions, $F(1,25)=.92$, $p=.35$. Effects of occasion on negative engagement during puzzle construction tasks were not moderated by sex or diagnostic status of target child or affected sibling's cognitive level, nor were there interaction effects between time and these variables.

Interestingly, there was a statistically significant increase in negative engagement during problem-solving tasks from preintervention to later measurement occasions and this effect was moderated by diagnostic status of the target child, $F(1,24)=8.69$, $p=.01$. Time, moderated by diagnostic status, accounted for 27% of the variance. A significant interaction effect between time and disability status was also detected when comparing preintervention scores to postintervention scores, $F(1,24)=4.56$, $p=.04$. This interaction effect accounted for 16% of the observed variance, which is depicted in Figure 5. For target children who had no diagnosis, rates of negative engagement were low for all three measurement occasions, For target children who had diagnoses, their rates of negative engagement during the problem-solving task appeared to increase with each measurement

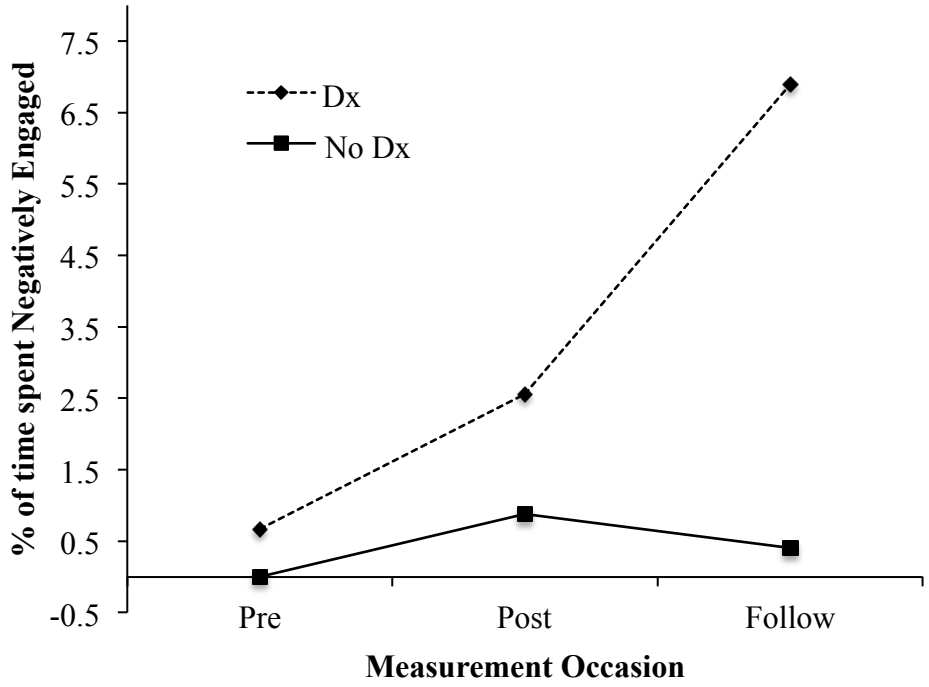

Figure 5. Mean percentage of time spent negatively engaged during problem-solving tasks. Interaction between time and diagnostic status of target child.

occasion. When analyzing negative engagement during problem-solving from preintervention to later measurement occasions, there were no significant interaction effects detected for sex of target child or for cognitive level of affected sibling. These variables did not moderate effects of occasion on negative engagement during problem-solving tasks.

Unengaged

Analysis of time that dyads spent socially unengaged during the unstructured interaction task showed a statistically significant decrease in unengaged time when

comparing preintervention scores to postintervention and follow-up scores, $F(1,25)=7.01$, $p=.01$. In this case, measurement occasion accounted for 22% of the observed variance. Effects of occasion on time spent socially unengaged during unstructured interactions were not moderated by sex or diagnostic status of target child or affected sibling's cognitive level, nor were there interaction effects between time and these variables.

Analysis of the time dyads spent unengaged during puzzle construction tasks indicated no main effect of time from preintervention to later measurement occasions, $F(1,25)=.42$, $p=.52$. Effects of occasion on time spent socially unengaged during puzzle construction tasks were not moderated by sex or diagnostic status of target child or affected sibling's cognitive level, nor were there interaction effects between time and these variables.

There was no main effect for time when analyzing time that dyads spent unengaged during problem-solving tasks from preintervention to later measurement occasions, $F(1,24)=.06$, $p=.81$. There was a significant interaction effect for sex of target child when unengaged time during problem-solving tasks at preintervention was compared to later measurement occasions, $F(1,24)=6.35$, $p=.02$. This interaction accounted for 21% of the observed variance, which is depicted in Figure 6. At preintervention, male and female target children differed in their rates of time spent unengaged during problem-solving tasks, with female target children spending less time unengaged with their affected sibling. At postintervention, a decrease in time spent unengaged was noted for male target children, while female rates of unengaged time appeared to remain at the same general level. During the follow-up problem-solving task,

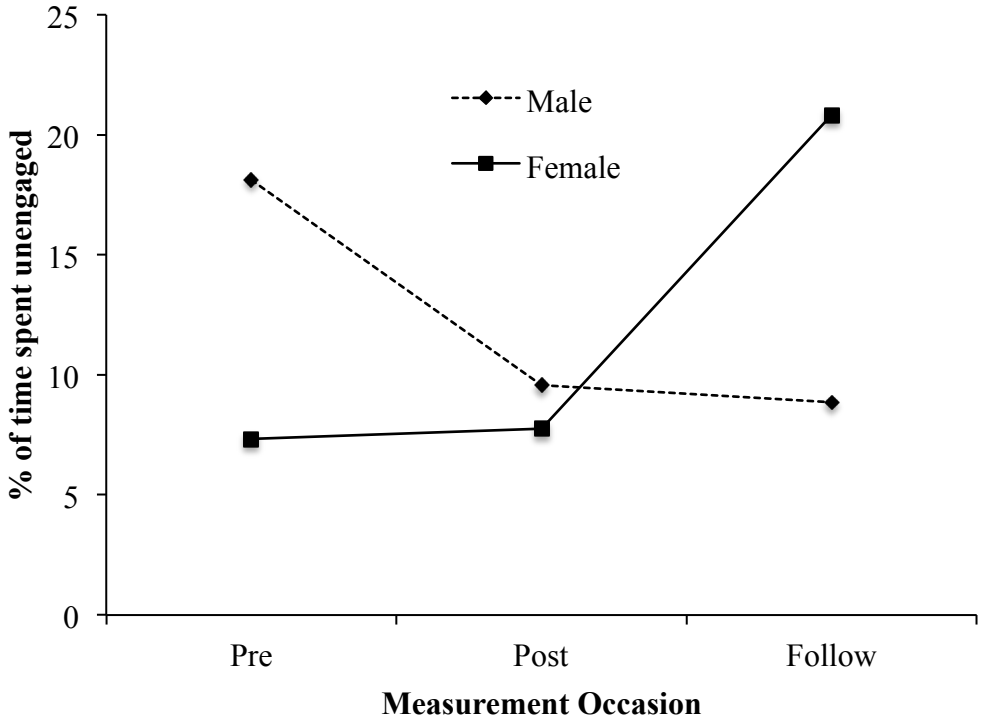

Figure 6. Mean percentage of time spent unengaged during problem-solving tasks. Interaction between time and sex of target child

female target children spent more time unengaged with their sibling compared to their previous rates of unengaged time and compared to rates of unengaged time spent by male target children. When analyzing amount of time spent unengaged during problem solving from preintervention to scores obtained at postintervention and follow-up, there was no significant interaction or moderating effects detected for cognitive level of affected sibling or for diagnostic status of target child.

At preintervention, male and female target children differed in their rates of time spent unengaged during problem-solving tasks, with female target children spending less time unengaged with their affected sibling. At postintervention, a decrease in time spent unengaged was noted for male target children, while female rates of unengaged time

appeared to remain at the same general level. During the follow-up problem-solving task, female target children spent more time unengaged with their sibling compared to their previous rates of unengaged time and compared to rates of unengaged time spent by male target children. When analyzing amount of time spent unengaged during problem-solving from preintervention to scores obtained at postintervention and follow-up, there was no significant interaction or moderating effects detected for cognitive level of affected sibling or for diagnostic status of target child.

Research Question #6

Are any improvements in observed sibling interaction quality maintained 8 to 10 weeks following program completion?

Positive Engagement

No statistically significant difference was detected in time spent positively engaged during unstructured interaction from postintervention to follow-up, $F(1,25)=.95$, $p=.34$, indicating that the increase was maintained over time. Effects of occasion on time spent positively unengaged during unstructured interactions were not moderated by sex or diagnostic status of target child or affected sibling's cognitive level, nor were there interaction effects between time and these variables.

There was no main effect for time on positive engagement during puzzle construction from postintervention to follow-up, $F(1,24)=.46$, $p=.50$. There was a significant interaction effect, accounting for 16% of the variance, for sex of target child when comparing scores from postintervention to scores obtained at follow-up,

$F(1,24)=4.71$, $p=.04$. This interaction effect is depicted in Figure 7 and indicates that female target children generally engaged in higher rates of positive engagement during puzzle construction at both preintervention and postintervention measurement occasions. During the follow-up measurement occasion, a decrease in time spent positively engaged during puzzle construction tasks was noted for female target children, while there was an increase in positive engagement for male target children. When comparing positive engagement during puzzle construction tasks from postintervention to follow-up, there were no interaction effects of cognitive level of sibling with autism spectrum disorder or for diagnostic status of target child.

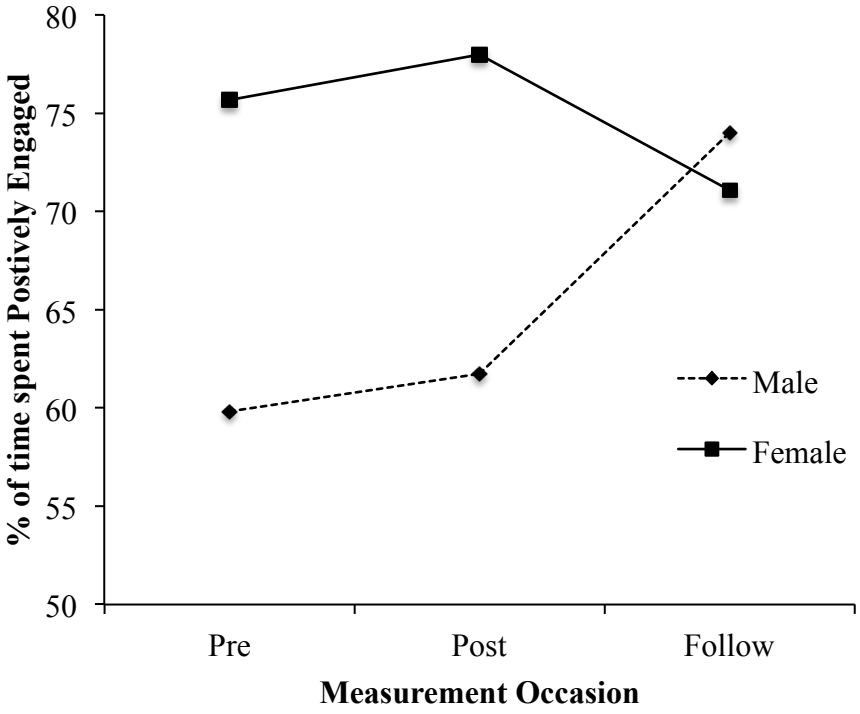

Figure 7. Mean percentage of time spent positively engaged during puzzle construction tasks. Interaction between time and sex of target child.

There was no main effect for time when comparing postintervention positive engagement scores to follow-up scores during problem-solving tasks, $F(1,24)=2.73$, $p=.11$. Effects of occasion on positive engagement during problem-solving tasks were not moderated by sex or diagnostic status of target child or affected sibling's cognitive level, nor were there interaction effects between time and these variables.

Negative Engagement

There was no main effect of time when comparing postintervention to follow-up measurement for negative engagement during unstructured tasks, $F(1,25)=.96$, $p=.34$. When analyzing negative engagement during unstructured time from postintervention to follow-up, there were no significant interaction or moderation effects detected for sex of target child, cognitive level of affected sibling, or for diagnostic status of target child.

There was no main effect for time from postintervention to follow-up for negative involvement during puzzle construction tasks, $F(1,25)=2.08$, $p=.16$. When analyzing negative engagement during puzzle construction tasks from postintervention to follow-up, there were no significant interaction or moderation effects detected for sex of target child, cognitive level of affected sibling, or for diagnostic status of target child.

Unengaged

No significant main effect was detected for time when analyzing socially unengaged scores during unstructured time from postintervention to follow-up, $F(1,25)=1.28$, $p=.27$. When analyzing time spent unengaged during unstructured play from postintervention to follow-up, there were no significant interaction or moderation

effects detected for sex of target child, cognitive level of affected sibling, or for diagnostic status of target child.

There was no main effect when comparing time spent unengaged during puzzle construction tasks from postintervention to follow-up, $F(1,25)=.24$, $p=.63$. Effects of occasion on time spent unengaged during puzzle construction tasks from postintervention to follow-up were not moderated by sex or diagnostic status of target child or affected sibling's cognitive level, nor were there interaction effects between time and these variables.

There was also no main effect for measurement occasion on time spent unengaged during problem-solving tasks from postintervention to follow-up measurements, $F(1,24)=1.85$, $p=.19$. Effects of occasion on time spent unengaged during problem-solving tasks from postintervention to follow-up were not moderated by sex or diagnostic status of target child or affected sibling's cognitive level, nor were there interaction effects between time and these variables.

Research Question #7

How satisfied are consumers of the Siblings Helping Siblings program as reported by child participants and by their parents?

Means and standard deviations were computed for target child and parent responses to the Sibling Satisfaction Survey and the Parent Satisfaction Survey, which are presented in Table 8. Findings suggest that, overall, both parents and participating children reported substantial satisfaction with the Siblings Helping Siblings program with regard to several aspects. The highest possible total score for both parents and children

Table 8. Means(Standard Deviations) for Satisfaction Survey

Parent Items	Parent Mean (*SD*)	Child Items	Child Mean (*SD*)
My child liked going to the Siblings Helping Siblings group	4.73 (.53)	I liked going to the Siblings Helping Siblings group	4.27 (1.12)
My child had fun at the Siblings Helping Siblings group	4.85 (.37)	I had fun at the Siblings Helping Siblings group	4.46 (.81)
My child made new friends at the Siblings Helping Siblings group	4.15 (1.05)	I made new friends at the Siblings Helping Siblings group	4.46 (.99)
My child was able to talk about how he/she feels about having a sibling with an autism spectrum disorder	4.15 (.88)	I was able to talk about how I feel about having a sibling with an autism spectrum disorder	3.88 (1.03)
My child learned more about autism spectrum disorders	4.35 (.69)	I learned more about autism spectrum disorders	4.27 (.96)
My child learned new ways of dealing with problems she/he has with her her/his sibling with an ASD	4.46 (.71)	I learned new ways of dealing with problems I have with my sibling with an ASD	4.04 (1.18)
My child gets along better with her/his sibling who has an ASD	3.69 (1.05)	I get along better with my sibling who has an ASD	3.08 (1.13)
I would recommend Siblings Helping Siblings to other parents of children who have siblings with ASD	4.88 (.33)	I think other kids who have a brother or sister with an ASD should go to a group like this one	4.15 (1.26)
I think that going to the Siblings Helping Siblings group helped my child	4.62 (.64)	I think going to the Siblings Helping Siblings group helped me	4.15 (1.05)
Total Score on Satisfaction Survey	39.92 (4.19)	Total Score On Satisfaction Survey	36.69 (7.21)

was 45, and high overall satisfaction was reported for both parents (*M*=39.92, *SD*=4.19) and for children (*M*=36.69, *SD*=7.21). While average scores for all items were generally favorable for both parents and children, some items received higher scores than others. For parents, the most favorably endorsed item indicated that parents strongly agreed that they would recommend the program to other families affected by autism spectrum disorder (*M*=4.88, *SD*=.33). Another item that was highly endorsed by parents was that they felt the group helped their child and that their child had fun attending the Siblings Helping Siblings program (*M*=4.85, *SD*=.37).

In addition to providing responses to the study-derived satisfaction questionnaires, some parents also provided written responses following these surveys. Many written responses indicated favorable impressions of the program that highlighted skills learned in the group, enjoyment of the group, and improved family relationships. See Table 9 for specific responses. One participant's written response also indicated that a more restrictive age range for participation may improve the group as well.

For target child participants, the most highly endorsed items indicated that they strongly felt they had fun attending the Siblings Helping Siblings program (*M*=4.46, *SD*=.81) and that they made new friends while attending the program (*M*=4.46, *SD*=.99). The lowest-rated item was the same for both parents and target children. Parents only "somewhat" agreed that their child participating in the program got along better with his/her sibling with autism spectrum disorder (*M*=3.69, *SD*=1.05), while target children neither agreed or disagreed (*M*=3.08, *SD*=1.13) that they got along better with their sibling with autism spectrum disorder at the end of the Siblings Helping Siblings

Table 9. Parent Written Responses

Responses written by parents on satisfaction survey
"Instead of running up to his room when frustrated and angry with Jerry and remain silent for long periods of time, Eli now comes to me and talks out exactly what is bothering him most and when he is done venting, he helps come up with ways to change the outcomes of situations in the future. I've found that Eli is more compassionate with Jerry. He has more patience and now goes out of his way to include Jerry when he has friends over. He's also very good at explaining to his friends that Jerry does things a little differently but likes to play too. Eli is overall a much happier kid and doesn't tell me he wants a new brother everyday."
"She loved going and I consider it very positive and helpful . . . . Would absolutely recommend."
"I know Aiden was sad to see it end. I can tell he enjoyed and looked forward to getting together with the other kids . . . Thank you for what you have done for our family."
"My child learned some great skills in your group . . . . I appreciated the homework that was sent home because it helped me as a parent, know what to look for and remind her to practice at home."
"Such a helpful program. We have enjoyed it."

program. When target children completed the program, they were asked to share at least one aspect of the group that they enjoyed, at least one aspect of the group they would change, and one thing they had learned in the group. Several children provided similar responses and a sampling of these written responses are presented in Table 10.

Exploratory Analyses

Exploratory Question A

Does participation in the Siblings Helping Siblings program increase knowledge of autism spectrum disorders in siblings of children with autism spectrum disorders?

Table 10. Child Written Responses

What did you like about the Siblings Helping Siblings group?	
"Activities"	"Projects"
"Friends"	"Everything"
"Games"	"That I made a lot of friends"
"Crafts"	"Snack time"
What do you wish was different about the group?	
"More games"	"More classes"
"I don't think I'd want anything different"	"More snacks"
"That it wasn't so close to dinner time"	"That we had field trips"
"More groups"	"That it was shorter"
What did you learn in the group?	
"How to deal with or recognize how my sibling feels."	"How to play with my brother"
"To control my temper"	"Not hate my brother"
"Be nice to my brother"	"That would be hard to have autism"
	"About Asperger's"

Children's responses to the KAAS were scored and analyzed to determine if there were any significant changes in knowledge of autism following participation in the Siblings Helping Siblings program. There was a statistically significant main effect for time when comparing KAAS scores at preintervention (M=15.08, SD=2.80) to scores obtained after the intervention, $F(1,25)=12.48$, p=.00. Measurement occasion accounted for 33% of the observed variance. Effects of occasion knowledge of autism spectrum disorders were not moderated by sex or diagnostic status of target child or affected sibling's cognitive level, nor were there interaction effects between time and these variables.

Exploratory Question B

Are any increases in knowledge of autism spectrum disorders maintained 8 to 10 weeks following program completion?

No main effect for time was detected when comparing scores from postintervention *(M*=16.42, *SD*=2.35) to scores at follow-up (*M*=16.69, *SD*=2.06), *F*(1,25)=.54, *p*=.47 indicating that increases from preintervention to postintervention maintained over time.

Exploratory Question C

Does participation in the Siblings Helping Siblings program decrease parent reports of internalizing and externalizing behaviors in siblings of children with autism spectrum disorders?

Parents completed the BASC-2, and scores were computed for the composite scales of Internalizing Problems, Externalizing Problems, and Adaptive Skills for target child participants. ANOVA was conducted to determine if scores changed over measurement occasions. On the BASC-2, mean scores for target children were in the average range for Externalizing Problems (*M*=59.23, *SD*=14.60). The mean score for Internalizing Problems (*M*=61.00, *SD*=10.30) fell in the at-risk range (T scores between 60 and 69), suggesting that on average, target children exhibited a slightly higher level of internalizing symptoms than normative samples.

There was a significant main effect for time on parent-reported internalizing symptoms, *F*(1,24)=6.20, *p*=.02. This effect indicated a statistically significant decrease in parent-reported internalizing symptoms from preintervention (*M*=60.69, *SD*=16.74) to

postintervention (M=57.50, SD=14.60) and follow-up (M=54.92, SD=13.44). Measurement occasion accounted for 20% of the observed variance. Effects of occasion on parent-reported internalizing behaviors were not moderated by sex or diagnostic status of target child or affected sibling's cognitive level, nor were there interaction effects between time and these variables.

There was no main effect for time on parent-reported externalizing problems from preintervention to later measurement occasions, $F(1,25)=2.70$, $p=.11$. Effects of occasion on parent-reported externalizing behaviors were not moderated by sex or diagnostic status of target child or affected sibling's cognitive level, nor were there interaction effects between time and these variables.

Exploratory Question D

Are any decreases in parent reports of internalizing and externalizing behaviors in siblings of children with autism spectrum disorder maintained 8 to 10 weeks following program completion?

No main effect of time was detected for parent ratings of internalizing problems from postintervention to follow-up, $F(1,25)=1.60$, $p=.22$, indicating that decreases reported for internalizing problems from preintervention to postintervention maintained over time. There was no main effect for time on parent-reported externalizing problems from postintervention to follow-up measurement occasions, $F(1,25)=.53$, $p=.48$.

Exploratory Question E

Does participation in the Siblings Helping Siblings program increase parent reports of adaptive skills in siblings of children with autism spectrum disorders?

On the BASC-2, mean scores for target children were in the average range for Adaptive Skills (M=49.25, SD=2.87). No main effects for time were detected for parent reported adaptive skills from preintervention to postintervention, $F(1,25)=.17$, $p=.69$. Effects of occasion on parent reported adaptive skills were not moderated by sex or diagnostic status of target child or affected sibling's cognitive level, nor were there interaction effects between time and these variables.

Exploratory Question F

Are any increases in parent reports of adaptive skills in siblings of children with autism spectrum disorder maintained 8 to 10 weeks following program completion?

Further, there was no main effect of time on parent-reported adaptive skills from postintervention to follow-up, $F(1,25)=.03$, $p=.87$.

CHAPTER 4

DISCUSSION

This study evaluated the effects of a psychoeducational group for siblings of children with autism spectrum disorders, Siblings Helping Siblings, on outcome measures of sibling relationship quality, sibling interaction quality, and use of coping strategies for the participating target children. This study also explored the effects of group participation on sibling knowledge of autism spectrum disorder and sibling adjustment. Factors such as diagnostic status and sex of target child, as well as cognitive level of the affected sibling, were also examined to identify potential moderating or interaction effects.

Available research on how having a sibling with autism spectrum disorder impacts typically developing children is generally mixed. Some studies show beneficial effects in the areas of social competence and self-concept (Mack & Reeve, 2007; Verte et al., 2003) and several studies show no additional risk or benefit (Hastings, 2003; Kaminsky & Dewey, 2007). There also are many studies that indicate increased risk for adjustment difficulties and diminished quality of sibling relationships (Hodapp & Urbano, 2007; Rao & Beidel, 2009). While available research provides no clear answers with regards to impact of autism spectrum disorder on unaffected siblings, it is likely that

there are some siblings who may be at risk just as there may be some who are not negatively impacted. Qualitative research examining parent perspectives on having a child with an autism spectrum disorder suggest that parents worry about the well-being of their typically developing children and the impact of autism spectrum disorder on these children. Several of these studies indicated that parents also report an adverse impact on the family unit, such as reduced time to spend with their typically developing children, disruption of family routines, and reduced ability to participate in activities as a family (Hutton & Caron, 2005; Montes & Halterman, 2008; Phelps et al., 2009).

Given the available research, many authors have recommended screening typically developing siblings for adjustment problems and providing necessary intervention. Moreover, many clinicians and medical practitioners recognize that illness and disabilities not only impact the individual with the diagnosis, but also those interacting with that individual. This has precipitated a movement toward a more family-centered approach to providing services, in which interventions and treatments are not only considered for the child with autism spectrum disorder, but also for other individuals in the family, including siblings and parents.

Support groups and classes exist for both parents and siblings of children with disabilities. For siblings of children with disabilities, there is a commercially available program (Sibshops) that is offered nationwide through hospitals and clinics. Other support programs have been developed specifically to address the needs of siblings of children with autism spectrum disorder. Limited research is available on the effectiveness of any sibling support groups, despite the widespread availability of such programs.

The present study sought to fill gaps in current literature by examining the effects of a program developed for siblings of children with autism spectrum disorder, Siblings Helping Siblings, which was based on the Sibshops model. Twenty-six children, their siblings affected with autism spectrum disorder, and their parents were participants in this study. All target children participated in weekly sessions over a period of 7 weeks. Session content included recreational games and crafts, as well as discussions about having a sibling with autism spectrum disorder. Lessons were presented during each class that addressed characteristics of autism spectrum disorder, coping skills, and problem-solving skills.

Main Findings

Coping Strategies

Results from this study indicated no change in child-reported use of coping strategies following participation in the Siblings Helping Siblings program. There was a statistically significant decrease in Avoidance Coping from postintervention to follow-up; however, the change in mean scores was small and likely not clinically meaningful. There are several possibilities that could have hindered detection of changes. Given that the measure used is not typically used to detect change, it may not be sensitive enough to show change over a short period of time (7 weeks in the case of this study). This study also used a small number of participants, thus limiting the power of the statistical tests to detect changes on this measure. It is also possible that the intervention was not strong enough to produce effects, either in intensity or length of time. One interesting finding with regards to coping strategies was that male and female target children differed in their

ratings of Active Coping at the onset of the study, and in their ratings at preintervention and follow-up measurement occasions, with female child participants generally reporting lower instances of active coping than male child participants at these measurement occasions. This finding opposes what Orfus and Howe (2008) reported, as their study suggested that female siblings of children with disabilities reported higher active coping than male siblings. Despite these conflicting findings, both this study and the study by Orfus and Howe (2008) indicate that sex of target children may be an important factor when planning interventions aimed to enhance coping skills. Again, it is important to note that the differences in scores between males and females in this study, although statistically significant, were small, and it is unknown whether this difference is clinically important. Another interesting finding was that Avoidance Coping was the most highly endorsed type of coping indicated by target children across waves of data collection. Given that there is minimal research on use of coping skills in children, this could be unique to siblings of children with autism spectrum disorder or it could also be characteristic of how children cope in general.

Sibling Relationship Quality

When parents rated their children's relationship quality in this study, their ratings indicated significant changes from pretest to posttest, showing increases in positive involvement and decreases in negative involvement. This finding suggests desirable results from participation in the program with regard to parent perception of sibling relationship quality. These findings support recommendations made by authors to provide interventions for unaffected siblings that focus on child understanding of autism spectrum

disorder and coping strategies. Siblings Helping Siblings addressed these topics, along with providing opportunities for children to practice problem-solving skills related to issues involving siblings with autism spectrum disorder. These program components may have helped target siblings be more accepting of their siblings and be able to find more effective ways of managing stress in problem situations, thus providing opportunities for more positive sibling interactions and less negative sibling interactions.

When target children rated their own relationship with their affected sibling, however, there was no change in their ratings of positive involvement, and there was a small but significant decrease in their ratings of negative involvement overall from postintervention to follow-up. There are several possible explanations for the discrepancy between results obtained from parent ratings and results obtained from target child ratings. First, it is entirely possible that there were no actual changes in relationship quality following participation in the program and parent ratings may have been more aligned with their own expectations of change, rather than accurate representations of their children's interactions. It is also possible that parents were more affected by social desirability than child participants, and that their ratings reflected their perceptions of the goals of the Siblings Helping Siblings program. On the other hand, accuracy of child reporting and child ability to self-reflect may be an issue when target children are rating their own feelings and behaviors toward their sibling. The 7-week intervention period may not have been long enough for children to self-reflect and process any changes noted in their relationships with their sibling.

Further analysis indicated that parent ratings for positive engagement differed over time depending on whether the target child was male or female; increases in parent

ratings of sibling relationship quality were apparent for male target children but not for female target children. It is possible that male target children exhibited a better response to the program in terms of how they interacted with their sibling with autism spectrum disorder. Another interesting, but difficult to interpret, finding was the interaction effect between time and disability status of the target child when examining child-reported negative involvement. First, child ratings of negative involvement differed at the onset of the study, with target children without disabilities reporting higher negative involvement compared to target children with disabilities. Even more interesting is that, following participation, a decrease in child-reported negative involvement occurred for target children without diagnoses and an increase in negative involvement occurred for target children who had a diagnosis. Children without diagnoses may be better responders to this intervention. It is also possible that social desirability was a stronger factor for children without a diagnosis as opposed to those children with a diagnosis. For these children, their responses may have reflected their perceptions of what they thought their responses should be after attending the Siblings Helping Siblings program.

It is difficult to interpret why children who had disability had increased ratings of negative involvement following group participation. Children with diagnoses such as ADHD may be more apt to respond impulsively or make ratings based on recent events rather than having their answers reflect their typical interactions with their siblings. These differences also may reflect that children who have a diagnosis exhibited poorer response to this program, as it was designed for typically developing children. It also is possible that sibling relationships may be more complex and more difficult to impact through interventions when both siblings have an identified diagnosis.

Sibling Interaction Quality

One of the unique aspects of this study was its use of direct observation to help determine effects of the Siblings Helping Siblings program. One of the most notable findings was the main effect for time when examining the percentage of time sibling dyads spent positively engaged versus time spent unengaged. This main effect over time was found only during the unstructured playtime. There are several possible explanations that could account for change occurring during the unstructured play task as opposed to the puzzle construction and problem-solving tasks. At preintervention, overall positive engagement was lowest during unstructured playtime, so the increase in percent of time spent positively engaged during unstructured time rather than tasks that had an identified objective could, in part, be due to the fact that were was more room for improvement. While participating in the Siblings Helping Siblings program, target children learned more about autism spectrum disorders, and this increased understanding may have lead to increased acceptance, thus opening the door for more positive interaction. Class content also included discussing ways target children could be more involved with and find more ways to interact with their siblings affected with autism spectrum disorder. These aspects of the Siblings Helping Siblings program may have helped target children be more motivated to interact with their affected sibling and to be more flexible in finding ways to interact with them.

Children with autism spectrum disorder often have difficulty with novelty and changes in routine. Participation in this study certainly presented both of these challenges for the affected siblings and their families. The unstructured playtime at preintervention was the very first task in which the sibling dyads participated. It is possible that target

children and their affected siblings alike became more accustomed to the research environment, thus making positive interactions difficult to establish at first due to the novelty of the situation; however, positive interactions increased as the study progressed. This may explain why increases in positive engagement occurred at postintervention and follow-up, as siblings affected with autism spectrum disorder may have become more accustomed to the research environment and study-related tasks.

There was no main effect across time on positive engagement during puzzle construction and problem-solving tasks; however, there were significant interaction effects. During puzzle construction tasks, there was an increase in positive engagement for male target children and a decrease in positive engagement for female target children from postintervention to follow-up. This finding supports the possibility that male children may respond better to this intervention than female children, given that this interaction was found when examining parent perceptions for positive involvement between siblings as well. Given that this task was the same for the three measurement occasions, it is possible that female participants mastered this task, thus becoming less engaged, while male participants remained more engaged. It is also possible that the visual spatial nature of this task contributed to the differences observed between male and female target siblings since males generally exhibit stronger visual spatial skills than females (Blum, 1997).

For problem-solving tasks, positive engagement increased for male target children but remained stable for female target children. At preintervention, female target children were already engaging positively with their sibling at a very high percentage rate (over 90%), while male target children had a lower percentage rate of positive

engagement (81%). Although the significant improvement in positive engagement for male target children may have been due to having more room for improvement, it is also possible that male children responded better to the intervention than female children.

Target children who had diagnoses themselves differed from target children who had no diagnosis in their rates of negative engagement during problem-solving tasks. For target children without diagnoses, their rates of negative engagement were negligible at preintervention and remained low at all of the following measurement occasions, while target children who had diagnoses engaged in higher rates of negative behaviors with each measurement occasion. It is also important to note that although rates increased for children who had a mental health diagnosis, they remained at generally low percentages (6% at highest) when compared to time spent engaged positively or time spent socially unengaged. Given that the puzzle construction task was identical for all measurement occasions, this increase in negative engagement could be reflective of mastery of the task. These results could also be reflective of reduced frustration tolerance for the target children with a diagnosis. Across interaction tasks, there was no change in negative engagement when comparing preintervention to later measurement occasions. Observing a significant reduction in negative engagement would be difficult to accomplish, given that negative engagement levels were quite low at preintervention.

Exploratory Analyses

No significant changes were noted on parent ratings of externalizing problems or adaptive skills; however, a significant decrease in parent-reported internalizing symptoms for target children occurred following participation in the group. The content of the

Siblings Helping Siblings program targeted skills that may be helpful in addressing difficulties with internalizing problems, such as anxiety and depression. In fact, this program utilized cognitive behavioral therapy techniques that are frequently employed to help individuals cope with internalizing difficulties. These types of skills may be more effective in addressing internalizing problems as opposed to externalizing problems. The Internalizing scale was also most elevated at preintervention, so decreases could also reflect regression toward the mean.

Analyses also showed a significant increase in sibling knowledge of autism spectrum disorders following participation in the Siblings Helping Siblings program. This finding supports conclusions made by Smith and Perry (2004), who also found increases in sibling knowledge of autism spectrum disorders following participation in the intervention used in their study. It is likely that content covered during the group positively impacted sibling knowledge as intended, but there is also a possibility that attending the Siblings Helping Siblings group provided opportunities for participants to engage in more discussion about autism spectrum disorders with other participants.

Strengths and Limitations

Although limitations significantly impact how one must interpret results and consider them within the context of available research, there are several aspects of this study that are strong and unique. Most importantly, this study involved a unique population, siblings of children with autism spectrum disorders. While adjustment in siblings of children with disabilities has been studied with some frequency, the present study examined constructs that have been rarely examined empirically. Relationship

quality between siblings when 1 child has an autism spectrum disorder, sibling knowledge of autism spectrum disorder, and use of coping strategies by unaffected siblings, are aspects of sibling adjustment that have not been thoroughly addressed in previous research. Even more rarely studied than the impact of autism spectrum disorder on typically developing siblings is the effectiveness of interventions employed to help these siblings. The present study adds to the knowledge base regarding the potential for designing effective interventions to support siblings of children with autism spectrum disorder.

The study design and procedures, while not without their flaws, also were strengths for this study. Multiple sources of information were used in order to provide a variety of perspectives on outcome variables, including direct observations of sibling interactions. Although observation of sibling dyads has occurred in some research studies evaluating the effectiveness of social skills interventions for children with autism spectrum disorders, there has been no published research to date that has used direct observation to examine interaction quality between siblings when studying the impact of disability on siblings. There have been some previous studies that have used parent reports in tandem with child reports to characterize the relationship quality between a sibling affected with autism spectrum disorder and an unaffected sibling, but this study is unique in using three different sources of information: parent report, child report, and direct observation. Using a repeated measures design also aids in concluding that maturation is not a likely explanation for the changes in outcome measures; most of the outcome variables did not change significantly from postintervention to follow-up measurement.

Several threats to internal validity are present for this study. Given that inclusion criteria already reduced the number of families who qualified for participating in the study, and given the difficulty with recruitment at the beginning of the study, several threats to internal validity were difficult to control. Target children were placed into groups based on when parents contacted researchers and parent preference for which time and day of week would be most convenient for their family. Given this method of assignment, unaffected siblings were not randomly assigned to groups nor were they placed in groups based on matched assignment of variables such as age, sex, or severity of autism spectrum disorder in the affected sibling. Despite efforts taken to ensure group differences were not impacting change in outcome measures over time, the lack of random or matched assignment to groups limits causal conclusions about the effect of the Siblings Helping Siblings program.

This study also lacked a control group. There is a possibility that the significant changes that occurred following intervention may have occurred due to maturation rather than actual participation in the intervention, although the repeated measures design reduces this likelihood. Therefore, without the opportunity to observe changes in a control group in comparison to the intervention group, it cannot be determined definitively that the changes observed were due solely to participation in the Siblings Helping Siblings program.

Participants in this study, particularly parents, were obviously not blind as to whether or not they participated in the intervention and the purpose of the intervention. Therefore, it is reasonable to assume that parents and some child participants would be aware of the desirable outcomes. Resulting changes could, in part, reflect social

desirability rather than actual effects of participation in the intervention. Moreover, parents may have had their own expectations for changes that would occur after participating in the program, and their ratings of their children's behavior may reflect this expectation rather than reflect changes associated with intervention participation. The fact that changes were noted on some outcome variables and not others makes this less likely, but still a possibility.

In addition to several threats of internal validity, several external validity threats are also apparent. Results obtained from the videoed observations may be difficult to generalize to other settings. While care was taken to limit the potential for reactivity of study participants, most participants were aware that they were being observed and videorecorded. The setting in which the observations took place was a clinical setting, and therefore, generalizing findings to other settings such as home, school, or other settings is difficult. The game-like tasks that were assigned during problem solving may be representative of play interactions that occur in the home setting, but are significantly different than real-life problem solving, which could be a more likely source of contention between siblings. For instance, more realistic, and perhaps, more frequent problem-solving opportunities may involve completing household chores or getting ready for a family outing may reflect. It is possible that results obtained from observations in this study may not generalize to more practical life tasks. Given that problem-solving tasks differed depending on data collection phases, it is possible that changes observed in sibling interaction quality may reflect engagement in that particular task rather then changes in interaction quality over time.

One of the reasons that it is difficult to arrive at conclusions about the impact of having a sibling with autism spectrum disorder is the fact that researchers have used a wide variety of measures to quantify aspects of sibling impact. While this study employed some measures that are widely established, such as the Sibling Inventory of Behavior and the Behavior Assessment System for Children, Second Edition, other measures have not been as well established in research. For example, the Children's Coping Strategy Checklist-Revised and the Knowledge of Autism/Asperger's Scale rarely have been used in published research studies and limited information regarding their psychometric properties was available. Children's self-reported coping strategies and knowledge of autism spectrum disorders are seldom studied constructs, so identifying established, reliable, and valid instruments to measure these outcomes was difficult. It is possible that these less-established instruments were not very sensitive to change, and the actual impact of the Siblings Helping Siblings program was not adequately captured.

Lastly, the small sample size used in this study limits the statistical power to detect reliable differences. Due to lower power, statistical tests used in this study may have failed to detect important changes following participation in Siblings Helping Siblings. This is especially likely when the changes from preintervention to later measurement occasions were small.

Implications for Further Research

Additional research examining the effectiveness of intervention programs such as Siblings Helping Siblings is warranted, given that the results of this study indicated that the program was associated with changes in relationship quality, sibling interaction

quality, and internalizing problems, as well as child knowledge of autism spectrum disorders. Future studies should use an increased sample size, which would greatly improve detection abilities by increasing statistical power. In an effort to increase internal validity, future larger-scale research projects should include waitlist control groups or employ assignment procedures that match participants with controls based on certain factors, such as sex of target children and disability status of the target children. These factors were moderators and produced interaction effects on several outcome variables, suggesting that these factors should be more controlled in subsequent studies to better ascertain their true impact.

Research focusing on the generalizability of outcomes should consider using more realistic observation tasks and may even wish to consider in-home observations. In-home observations could include unstructured play, as well as more realistic and practical problem-solving tasks, such as completing household chores. Providing more realistic tasks within naturalistic settings would provide more generalizable information as to the real-life impact of participating in the Siblings Helping Siblings Program.

Given that completing home-based observations may be difficult to accomplish and would provide ample opportunities for threats to internal validity, conducting observations in a research setting may still be preferable for some researchers. In order to create a case for generalizability, it may be beneficial for parents to observe the interactions and then rate each observation as to how typical their children's behaviors were, which would provided a clearer indication that results obtained from the observations generalized to settings outside of the research environment. Moreover, if problem-solving tasks are introduced in further research, tasks should be assigned to

sibling dyads in such a way that each type of task is done for some participants at preintervention, some participants at postintervention, and for some participants at follow-up. Given this arrangement, if significant changes were to occur, it would be easier to determine if changes over time were related to the task itself, or related to other variables, such as the intervention itself.

Given that some variables such as diagnostic status and sex of target children impacted scores on outcome measures over time, it would be wise to consider further study on how sex of target children and their diagnostic status can impact response to intervention. It would be appropriate to revisit these variables as moderators and as possible agents of interaction effects. This study provided some indication that males responded better to the Siblings Helping Siblings program, given parent perception of the sibling relationship and male target children's interactions with their affected siblings during direct observation tasks. One previous study (Orsmond, Sekuo, & Seltzer, 2009) also suggested differences in relationship quality depending on sex of target child as their results indicated that adolescent and adult female siblings of children with autism spectrum disorder reported more positive sibling relationships compared to male siblings. Further studies should also examine sex of participants further to aid in making stronger conclusions regarding how sex of unaffected siblings may impact response to intervention. Children with diagnoses responded differently than children without disabilities to the intervention in terms of their own ratings of sibling relationship quality and in their negative engagement during direct observations of sibling interactions. Again, this variable should be examined in later studies both as a moderator and as a

potential for interaction effects to make stronger conclusions regarding impact of the program on target children who also have a diagnosis.

Because children with diagnoses responded differently to the program, it would also be appropriate to take these diagnoses into account when providing interventions. The Siblings Helping Siblings program was designed for typically developing children, and subsequent programs should account for the individual needs of participating siblings who may have a diagnosis themselves. Although variables such as age of target children, severity of autism spectrum disorder in affected siblings, and language abilities of the affected siblings were not examined as moderators or as factors for interaction, it would be beneficial to examine these factors in later studies with larger sample populations to determine if these variables impact response to the intervention.

Increasing the strength of the intervention may also provide the opportunity to observe stronger results that are more easily detected with statistical analyses. Intervention strength could be increased in several ways. For example, the duration of the intervention program could be increased to last beyond 7 weeks. Longer sessions could be implemented as well. Booster sessions could also help improve intervention strength over time as well as provide further support for maintenance effects. In this study, homework assignments were used as a way to provide parents with information on group content so they could support skills learned within program sessions. Future studies could encourage greater parent involvement by having parents also participate in parts of each session or by dedicating one session to both parents and unaffected siblings. Increasing parent involvement may increase the likelihood that skills learned in the program are reinforced and supported in the home setting.

Future research should also consider adding a peer-modeling component to current group structure, where a peer, such as a child who has already successfully completed the group, would participate and act as a positive role model for other group members. Future researchers should also consider creating groups that are more tailored to specific age groups. The current program catered to a wide range of ages due to the limited sample size; however, creating programs for more restricted age groups would provide the opportunity to tailor activities and lesson content to best suit the developmental needs of that particular age group of children, which could increase strength of the intervention as well.

Conclusions

This study sought to identify effects of the Siblings Helping Siblings program for siblings of children with autism spectrum disorder. Positive effects were found for parent perceptions of relationship quality, in that parent reports of negative involvement among sibling dyads decreased following program participation and parent reports of positive involvement increased following participation. Furthermore, these effects were maintained from postintervention to follow-up. Increases in positive sibling interactions were also found, based on direct observations of sibling dyads interacting during unstructured time. Moreover, exploratory analyses suggested increases in knowledge of autism spectrum disorders and decreases in parent reported internalizing problems in target siblings. These findings imply that there was a significantly positive impact on target children after participating in this program. These results, paired with high rates of parent and child satisfaction, indicate that this type of program could be an asset to clinics

and schools that serve families affected by autism spectrum disorder. Psychoeducational programs such as Siblings Helping Siblings may help service providers meet the needs of not only children affected with autism spectrum disorder, but also meet the needs of their siblings and potentially other family members. Practitioners who wish to implement such a program should be aware that factors such as sex and diagnostic status of participating children may affect how they respond to the program, and adjustments should be made to ensure the greatest benefit to those participating children. Furthermore, the implications of this study also suggest that further research be conducted to further explore variables impacting the effectiveness of such programs.

APPENDIX A

CHILDREN'S COPING STRATEGIES CHECKLIST-

REVISION 1

CHILDREN'S COPING STRATEGIES CHECKLIST-REVISION 1 (CCSC-R1)

Instructions

Sometimes kids have problems or feel upset about things. When this happens, they may do different things to solve the problem or to make themselves feel better. For each item below, choose the answer that BEST describes how often you usually did this to solve your problems or make yourself feel better during the past month. There are no right or wrong answers, just indicate how often YOU USUALLY did each thing in order to solve your problems or make yourself feel better during the past month

When you had problems in the last month . . .

1. You thought about what you could do before you did something.	**1**	**2**	**3**	**4**
2. You tried to notice or think about only the good things in your life.	**1**	**2**	**3**	**4**
3. You tried to ignore it.	**1**	**2**	**3**	**4**
4. You told people how you felt about the problem.	**1**	**2**	**3**	**4**
5. You tried to stay away from the problem.	**1**	**2**	**3**	**4**
6. You did something to make things better.	**1**	**2**	**3**	**4**
7. You talked to someone who could help you figure out what to do.	**1**	**2**	**3**	**4**
8. You told yourself that things would get better	**1**	**2**	**3**	**4**
9. You listened to music.	**1**	**2**	**3**	**4**
10. You reminded yourself that you are better off than a lot of other kids.	**1**	**2**	**3**	**4**
11. You daydreamed that everything was okay.	**1**	**2**	**3**	**4**
12. You went bicycle riding.	**1**	**2**	**3**	**4**
13. You talked about your feelings to someone who really understood.	**1**	**2**	**3**	**4**
14. You told other people what you wanted them to do.	**1**	**2**	**3**	**4**
15. You tried to put it out of your mind.	**1**	**2**	**3**	**4**
16. You thought about what would happen before you decided what to do.	**1**	**2**	**3**	**4**

17. You told yourself that it would be OK.	**1**	**2**	**3**	**4**
18. You told other people what made you feel the way you did.	**1**	**2**	**3**	**4**
19. You told yourself that you could handle this problem.	**1**	**2**	**3**	**4**
20. You went for a walk.	**1**	**2**	**3**	**4**
21. You tired to stay away from things that made you feel upset.	**1**	**2**	**3**	**4**
22. You told others how you would like to solve the problem.	**1**	**2**	**3**	**4**
23. You tried to make things better by changing what you did.	**1**	**2**	**3**	**4**
24. You told yourself you have taken care of things like this before.	**1**	**2**	**3**	**4**
25. You played sports.	**1**	**2**	**3**	**4**
26. You thought about why it happened.	**1**	**2**	**3**	**4**
27. You didn't think about it.	**1**	**2**	**3**	**4**
28. You let other people know how you felt.	**1**	**2**	**3**	**4**
29. You told yourself you could handle whatever happens	**1**	**2**	**3**	**4**
30. You told other people what you would like to happen.	**1**	**2**	**3**	**4**
31. You told yourself that in the long run, thing would work out for the best.	**1**	**2**	**3**	**4**
32. You read a book or magazine.	**1**	**2**	**3**	**4**
33. You imagined how you'd like things to be.	**1**	**2**	**3**	**4**
34. You reminded yourself that you knew what to do.	**1**	**2**	**3**	**4**
35. You thought about which things are best to do to handle the problem.	**1**	**2**	**3**	**4**
36. You just forgot about it.	**1**	**2**	**3**	**4**
37. You told yourself that it would work itself out.	**1**	**2**	**3**	**4**
38. You talked to someone who could help you solve the problem.	**1**	**2**	**3**	**4**

39. You went skateboard riding or roller skating.	**1**	**2**	**3**	**4**
40. You avoided the people who made you feel bad.	**1**	**2**	**3**	**4**
41. You reminded yourself that overall things are pretty good for you.	**1**	**2**	**3**	**4**
42. You did something like video games or a hobby.	**1**	**2**	**3**	**4**
43. You did something to solve the problem.	**1**	**2**	**3**	**4**
44. You tried to understand it better by thinking more about it.	**1**	**2**	**3**	**4**
45. You reminded yourself about all the things you have going for you.	**1**	**2**	**3**	**4**
46. You wished that bad things wouldn't happen.	**1**	**2**	**3**	**4**
47. You thought about what you needed to know so you could solve the problem.	**1**	**2**	**3**	**4**
48. You avoided it by going to your room.	**1**	**2**	**3**	**4**
49. You did something in order to get the most you could out of the situation	**1**	**2**	**3**	**4**
50. You thought about what you could learn from the problem.	**1**	**2**	**3**	**4**
51. You wished that things were better.	**1**	**2**	**3**	**4**
52. You watched TV.	**1**	**2**	**3**	**4**
53. You did some exercise.	**1**	**2**	**3**	**4**
54. You tried to figure out why things like this happen.	**1**	**2**	**3**	**4**

APPENDIX B

SIBLING INVENTORY OF BEHAVIOR-

CHILD REPORT

Sibling Inventory of Behavior
(Child Report)

For each item, read the questionnaire to the participating sibling, using the name of the affected sibling.

1	2	3	4	5
Never	Hardly ever	Sometimes	Often	Always

How often are you/do you

1.	Happy when (_____) does well	1	2	3	4	5
2.	Tease or annoy (_____)	1	2	3	4	5
3.	Get angry with (_____)	1	2	3	4	5
4.	Play with (_____)	1	2	3	4	5
6.	Want (_____) to succeed (do well)	1	2	3	4	5
7.	Stay away from (_____) when you can	1	2	3	4	5
8.	Think of things you can do with (_____)	1	2	3	4	5
9.	Argue with (_____)	1	2	3	4	5
10.	Have fun at home with (_____)	1	2	3	4	5
11.	Are ashamed of (_____)	1	2	3	4	5
12.	Feel bad when things are hard for (_____)	1	2	3	4	5
13.	Get upset when you have to be with (_____)	1	2	3	4	5
14.	Teaches (_____) new things	1	2	3	4	5
15.	Help (_____) in a new situation	1	2	3	4	5
16.	Treat (_____) as a good friend	1	2	3	4	5
17.	Try to avoid being seen with (_____)	1	2	3	4	5
18.	Want (_____) to be happy	1	2	3	4	5
19.	Make plans that include (_____)	1	2	3	4	5
20.	Hurt (_____)'s feelings	1	2	3	4	5
21.	Try to comfort (_____) when s/he is unhappy or upset	1	2	3	4	5

22.	Share secrets with (_____)	1	2	3	4	5
23.	Take care of (_____)	1	2	3	4	5
24.	Tattle on (_____)	1	2	3	4	5
25.	Are jealous of (_____)	1	2	3	4	5
26.	Have physical fights with (_____) (not just for fun)	1	2	3	4	5
27.	Nosy about (_____) and try to find things out about him	1	2	3	4	5
28.	Try to teach (_____) how to behave	1	2	3	4	5
29.	Use (_____) to get something you want	1	2	3	4	5
30.	Blames (_____) when something goes wrong	1	2	3	4	5
31.	Competitive with (_____)	1	2	3	4	5
32.	Dislike (_____)	1	2	3	4	5

APPENDIX C

SIBLING INVENTORY OF BEHAVIOR-

PARENT REPORT

Sibling Inventory of Behavior
Parent Report

I. Your Child's Feelings About His/Her Sibling affected by an Autism Spectrum Disorder

For each item, circle the number that shows how often your child behaves in that way toward your child with autism spectrum disorder

1	2	3	4	5
Never	Seldom	Sometimes	Often	Always

How often your child …….

1.	Is pleased by the progress your child with ASD makes	1	2	3	4	5
2.	Teases or annoys your child with ASD	1	2	3	4	5
3.	Gets angry with your child with ASD	1	2	3	4	5
4.	Accepts your child with ASD as a playmate	1	2	3	4	5
5.	Is embarrassed to be with your child with ASD in public	1	2	3	4	5
6.	Wants your child with ASD to succeed.	1	2	3	4	5
7.	Stays away from your child with ASD if possible	1	2	3	4	5
8.	Gets ideas for things they can do together	1	2	3	4	5
9.	Fusses and argues with your child with ASD	1	2	3	4	5
10.	Has fun at home with your child with ASD	1	2	3	4	5
11.	Acts ashamed of your child with ASD	1	2	3	4	5
12.	Shows sympathy when things are hard for your child with ASD	1	2	3	4	5
13.	Frowns or pouts when your child with ASD has be with him/her	1	2	3	4	5
14.	Teaches your child with ASD new skills	1	2	3	4	5
15.	Helps your child with ASD adjust to a new situation	1	2	3	4	5
16.	Treats your child with ASD as a good friend	1	2	3	4	5
17.	Tries to avoid being seen with your child with ASD	1	2	3	4	5

18.	Is concerned for the welfare and happiness of your child with ASD	1	2	3	4	5
19.	Makes plans that include your child with ASD	1	2	3	4	5
20.	Hurts the feelings of your child with ASD	1	2	3	4	5
21.	Tries to comfort your child with ASD when s/he is unhappy or upset	1	2	3	4	5
22.	Shares secrets with your child with ASD	1	2	3	4	5
23.	Baby-sits and cares for your child with ASD	1	2	3	4	5
24.	Tattles on your child with ASD	1	2	3	4	5
25.	Is jealous of your child with ASD	1	2	3	4	5
26.	Has physical fights with your child with ASD (not just for fun)	1	2	3	4	5
27.	Is nosy and has to know everything about your child with ASD	1	2	3	4	5
28.	Tries to teach your child with ASD how to behave	1	2	3	4	5
29.	Takes advantage of your child with ASD	1	2	3	4	5
30.	Blames your child with ASD when something goes wrong	1	2	3	4	5
31.	Is very competitive against your child with ASD	1	2	3	4	5
32.	Resents your child with ASD	1	2	3	4	5

APPENDIX D

OBSERVATION RECORDING FOR

ENGAGEMENT QUALITY

Observation Recording
Engagement Quality and Teaching

Observer: _____ Date: _____

Video ID: _____

Instructions: Each box represents a 10 second interval Observe the target sibling during the first five seconds of each interval. In the last five seconds of each interval, write in your response using the codes below. If you observe both positive and negative engagement during one interval, code which type of engagement is most predominant. If neither are present, code as unengaged.

Overall Engagement

Positively Engaged (code as P):

- Initiates interactions appropriately
- Gives, shares, or shows objects
- Gives a compliment, asks a question
- Shows support verbally or physically
- Plays with the sibling,
- Shows shared enjoyment by smiling, laughing,
- Shows physical affection
- Responds appropriately to negative behaviors displayed by sibling,
- Works toward the same goal would also be considered positively engaged; however, simply working with the same materials without sharing or engaging somehow would be considered unengaged.

Negatively Engaged (code as N):

- Physical actions, such as hitting, biting, kicking, scratching, restricting other's movement, throwing objects with intent to harm/hurt, taking objects, etc.
- Verbal aggression, such as yelling, teasing, threatening, and making negative statements directed toward sibling.
- Inappropriate gestures and making faces would also be included here.

Unengaged (code as U): Code when target sibling is not interacting with the partner sibling in any way. The target sibling
may be appropriately or inappropriately engaged in solitary activity. Sibling dyads may also be using same materials (i.e. blocks) but not engaged with each other in any way by sharing or working toward a goal together

	:10	:20	:30	:40	:50	:60		Total Number of P
P/N/U								_____ = %
								30
	:10	:20	:30	:40	:50	:60		
P/N/U								
								Total Number of N
	:10	:20	:30	:40	:50	:60		
P/N/U								_____ = %
								30
	:10	:20	:30	:40	:50	:60		
P/N/U								Total Number of U
	:10	:20	:30	:40	:50	:60		_____ = %
P/N/U								30

APPENDIX E

KNOWLEDGE OF AUTISM/ASPERGER'S

QUESTIONNAIRE

Knowledge of Autism

Ross & Cuskelly (2006)

1.	More girls have autism than boys	T	F
2.	Many children with autism get upset if there are changes to routines at home or school (e.g. usually on Tuesdays they go swimming, but one day they can't)	T	F
3.	All children with autism deliberately hurt themselves	T	F
4.	All children with autism will become adults who have a job and live on their own (i.e. be independent)	T	F
5.	Autism is more common in families who have a history of the disorder (e.g. more likely to have autism if grandparents are autistic)	T	F
6.	Most children with autism do very well at school	T	F
7.	Children with autism don't seem to know how other people are feeling (e.g. they can't tell when you are feeling angry or sad)	T	F
8.	You can "catch" autism from children who have it - it's a disease like chickenpox	T	F
9.	Many children with autism have problems looking at you in the eye when you are talking to them	T	F
10.	All children with autism will eventually "grow out" of the disorder and no longer be autistic as adults	T	F
11.	Some children with autism sometimes get upset by different noises or when they are touched by people	T	F
12.	All children with autism can talk well	T	F
13.	Most children with autism prefer to play on their own	T	F
14.	Some children with autism move their body in unusual ways – e.g. flap their hands	T	F
15.	Many children with autism spend lots and lots of time on specific activities or things that interest them (e.g. Tom spends hours and hours playing with is train set)	T	F
16.	Many children with autism don't make friends	T	F
17.	Some children with autism repeat words or phrases that they have heard over and over again	T	F
18.	Children with autism usually enjoy playing games with other children	T	F
19.	All children with autism are good at making friends	T	F
20.	All children with autism generally like to share their interests or enjoyment in activities with other people	T	F

APPENDIX F

CHILD SATISFACTION SURVEY

Sibling Satisfaction Survey

Name: _____
Date:_____

1. **I liked going to the Siblings Helping Siblings group.**
   1----------2----------3----------4----------5
   Strongly Disagree Strongly Agree

2. **I had fun at the Siblings Helping Siblings group.**
   1----------2----------3----------4----------5
   Strongly Disagree Strongly Agree

3. **I made new friends at the Siblings Helping Siblings group**
   1----------2----------3----------4----------5
   Strongly Disagree Strongly Agree

4. **I was able to talk about how I feel about having a brother/sister with an autism spectrum disorder.**
   1----------2----------3----------4----------5
   Strongly Disagree Strongly Agree

5. **I learned more about autism spectrum disorders**.
   1----------2----------3----------4----------5
   Strongly Disagree Strongly Agree

6. **I learned new ways of dealing with problems I have with my brother/sister with an autism spectrum disorder.**
   1----------2----------3----------4----------5
   Strongly Disagree Strongly Agree

7. **I get along better with my brother/sister with an autism spectrum disorder.**
   1----------2----------3----------4----------5
   Strongly Disagree Strongly Agree

8. **I think other kids who have a brother or sister with an autism spectrum disorders should go to a group like Siblings Helping Siblings.**
   1----------2----------3----------4----------5
   Strongly Disagree Strongly Agree

9. **I think that going to the Siblings Helping Siblings group helped me.**
   1----------2----------3----------4----------5
   Strongly Disagree Strongly Agree

Do you have anything else you want us to know about group? What did you like? What didn't you like? Let us know on the back of this page!

APPENDIX G

PARENT SATISFACTION SURVEY

Parent Satisfaction Survey

Child Name: _____
Date:_____

1. **My child liked going to the Siblings Helping Siblings group.**
   1----------2----------3----------4----------5
   Strongly Disagree Strongly Agree

2. **My child had fun at the Siblings Helping Siblings group.**
   1----------2----------3----------4----------5
   Strongly Disagree Strongly Agree

3. **My child made new friends at the Siblings Helping Siblings group.**
   1----------2----------3----------4----------5
   Strongly Disagree Strongly Agree

4. **My child was able to talk about how she/he feels about having a sibling with an autism spectrum disorder.**
   1----------2----------3----------4----------5
   Strongly Disagree Strongly Agree

5. **My child learned more about autism spectrum disorders**.
   1----------2----------3----------4----------5
   Strongly Disagree Strongly Agree

6. **My child learned new ways of dealing with problems she/he has with her/his sibling with an ASD.**
   1----------2----------3----------4----------5
   Strongly Disagree Strongly Agree

7. **My child gets along better with her/his sibling who has an ASD.**
   1----------2----------3----------4----------5
   Strongly Disagree Strongly Agree

8. **I would recommend Siblings Helping Siblings group to other parents of children with siblings who have autism spectrum disorders.**
   1----------2----------3----------4----------5
   Strongly Disagree Strongly Agree

9. **I think that going to the Siblings Helping Siblings group helped my child.**
   1----------2----------3----------4----------5
   Strongly Disagree Strongly Agree

Please share any additional comments or feedback you have about the group on the back of this form. Thank you!

APPENDIX H

DEMOGRAPHIC QUESTIONNAIRE

Parental Information

Person completing this form:

( ) Mother ( ) Father

Parent Relationship Status:

( ) Single parent ( ) Married, living together ( ) Married, separated

( ) Divorced, single ( ) Divorced, remarried ( ) Living together, unmarried

Preferred Language: _____

In terms of race/ethnicity, which of the following best describes your child/children?

( ) African American
( ) Hispanic/Latino
( ) Native American
( ) White/Caucasian
( ) Asian American
( ) Other: _____

In terms of race/ethnicity, which of the following do you most identify for your children?

( ) African American
( ) Hispanic/Latino
( ) Native American
( ) White/Caucasian
( ) Asian American
( ) Other: _____

What is your household yearly income?

( ) $5,000-$20,000 ( ) $21,000-$40,000 ( ) $41,000-$60,000
( ) $61,000-$80,000 ( ) $81,000 +

How many years of formal education have you completed?

( ) Less than high school ( ) High school/GED ( ) Some college or trade school

( ) Graduated college

Participating Child Information

Name: _____ Nickname: _____

Date of birth: _____

Grade in school: _____

1. **Has your child participated in a group for siblings of children with disabilities before?**

   Yes No

2. **Has your child participated in other programs or services, such as outside therapy, support groups, or programs within the school setting?**

   _____

   _____

3. **Sometimes, we will give out snacks or small rewards during group. Please note any diet restrictions your child has:**

   _____

   _____

4. **We will also be making crafts and working with different materials. Please note any allergies your child has (i.e. latex, adhesives, etc):**

_____

   _____

5. **At what age did you first talk with your child about your child's autism spectrum diagnosis?**

   _____

6. **Please complete the following about your child's siblings. Please use the back side if necessary**

Sibling 1: Age _____ Diagnosis/Disability, if applicable_____

Sibling 2: Age _____ Diagnosis/Disability, if applicable_____

Sibling 3: Age _____ Diagnosis/Disability, if applicable_____

Sibling 4: Age _____ Diagnosis/Disability, if applicable_____

Sibling 5: Age _____ Diagnosis/Disability, if applicable_____

Participating Sibling with ASD Information

1. At what age was your child diagnosed with an autism spectrum disorder?

2. How would you describe your child's cognitive abilities?

( ) Superior
( ) Above average
( ) Average
( ) Below average
( ) Impaired

3. At what developmental age does your child function?

_____

4. Please indicate the services your child receives outside of the school below:

Service	**Frequency and duration**

5. Does your child attend school? Yes No

If yes, please answer the questions that apply below. If no, you have no further questions to answer.

6. Is your child receiving services under an Individualized Education Plan (IEP)?
Yes No

7. If yes, please indicate what best describes your child's current placement.

( ) Fully included in general education classroom
( ) Mostly regular education classroom with some pull out services
( ) Mostly resource room, with some general education time
( ) Self contained classroom
( ) Self contained school

8. Please check all school services that your child receives as a part of his/her Individualized Education Plan (IEP)

( ) speech language therapy
( ) occupational therapy
( ) physical therapy
( ) school psychology services
( ) nursing services
( ) adapted physical education classes
( ) other: _____

APPENDIX I

TREATMENT INTEGRITY CHECKLIST

Treatment Integrity Checklist

Date: _____ Group #: _____

Session Number: _____

Instructions: Put an X next to each component completed for each session.

Component	
Starter Activity	
Warm Up Activity	
Lesson	
Snack	
Closing Activity	
Encouraged group discussion	
Met group objectives	
Encouraged participation from all group members	
Reviewed and handed out homework	
Total Number of Checks	/9
Session Integrity %	

APPENDIX J

RECRUITING FLYER

Siblings Helping Siblings

A group for siblings of children with autism spectrum disorders

- This 7 session class will provide opportunities for siblings to
  - Meet other siblings of kids with ASD
  - Learn coping strategies
  - Learn problem solving skills
  - Have fun!

- This group is part of a research project being done through the University of Utah and additional requirements for participation in the group include the following:
  - Siblings participating in the group must be between the ages of 8 and 12 years old
  - Siblings with an Autism Spectrum Disorder must be 12 or younger
  - In person visits with researchers to gather data
- Families will receive a gift certificate for participating in the study

When: Tuesdays 4:30 to 6:30pm or
Wednesdays 12:30 to 2:30pm
Start dates vary

If you are interested in learning more about participating, please contact Natalie Buerger

801-403-5402

Where:

Jordan Family
Education Center

Rivers Edge School
319 W 11000 S
South Jordan, UT
84095

APPENDIX K

SCREENING PACKET

Phone Screening Script

Introduction: **I'm calling because you left a phone message expressing interest in possibly having your child participate in the Siblings Helping Siblings group, a program for siblings of children with autism spectrum disorders. Let me tell you a little more about participating. The group will meet for seven consecutive weeks at the Jordan Family Education Center. In the group, we will play fun games and have discussions with the group of children about what it is like to have a brother or sister with an autism spectrum disorder. We will also present lessons on autism spectrum disorders, coping skills and problem solving skills. Because this is a research study, we will also need to collect some information about you and your child before, during, and after group participation. Does this sound like something you would be interested in having your child attend?**

If yes: **Great! I just have to confirm a few details to make sure you and your child meet the requirements for participating in the study.**

Aside from participating in the seven week group sessions, we will also need to collect information at three or four different points of the study. Each of these visits to collect more information is estimated to last approximately 60 to 90 minutes, and will occur after school hours or on weekends. Is this something you would be able to do?

If no: **Unfortunately, because this is a research study, the data collection is an important part of the study in order to determine how effective our program is. I can give you information about another program for siblings of children with disabilities that are not research studies; they typically hold groups on one Saturday every other month.**

Allies With Families Sibshops

Primary Contact: Jesse M. Higbee
Allies With Families
505 East 200 South
Salt Lake City, UT 84102 map
Phone: 801-201-8739
http://www.allieswithfamilies.org

If yes: Move on to inclusion criteria sheet

Inclusion Criteria Worksheet for Phone Screening

First, tell me a little bit about your child that you may want to participate in the Siblings Helping Siblings group:

Name: _____ **Gender**: _____

Age: _____ **Grade**: _____

Diagnoses? No Yes
(specify)_____

Now, we need to ask a couple of questions about your other child who has an autism spectrum disorder.

Name: _____ **Gender**: _____

Age: _____ **Grade:** _____

Diagnosis (circle):

Autistic Disorder Asperger's Disorder PDD-NOS High Functioning Autism

Who provided this diagnosis?

_____
_____
_____
_____

How would you describe your child's language abilities?

( ) Nonverbal (or Echolalic)
( ) Use of 1-2 words
( ) Phrase speech
( ) Verbally fluent

Does your child have an Individualized Education Plan or IEP at school?
No Yes

If yes, **What is his/her educational classification at school?**

_____

Checklist for participation:

Criteria	Check if yes
Participating Child	
Between ages of 8-12	
No diagnosis of ASD or Intellectual Disability	
Affected Sibling	
ASD diagnosis or Autism classification for school	
12 years old or younger	

If family meets criteria, **Thank you for your interest in having your child participate in the research study. We are excited that you are interested in participating and will be talking with you to set up a time for you to come in to go over the details of the study and the consent form that you would need to sign in order for your child to participate. Do you have any questions about the study right now?**

If the family does not meet criteria: **Unfortunately, because this is a research study, participants and their families must meet certain criteria, such as age and birth order, in order to participate. I can provide you with information about another program for siblings of children with disabilities that are not research studies; they typically hold groups on one Saturday every other month. I can also keep your name on a list to contact if this class is offered in the following school year when the research study will be completed and we won't have strict criteria for participation.**

Allies With Families Sibshops

Primary Contact: Jesse M. Higbee
Allies With Families
505 E. 200 S.
Salt Lake City, UT 84102 map
Phone: 801-201-8739
http://www.allieswithfamilies.org

APPENDIX L

SAMPLE HOMEWORK ASSIGNMENT

Go Fish Feelings!

Dear Parents,

This week, we watched a video about children with Asperger's Disorder to reinforce what group members learned last week about Autism Spectrum Disorders. This video showed children diagnosed with Asperger's Disorder explaining some of their experiences and how Asperger's Disorder affects them.

The content of our lesson today was all about feelings. We discussed different feelings and different experiences that impact our feelings. We also talked about specific situations with siblings and how we can identify our own feelings. One of the important ways of dealing with feelings is to be able to talk about them. One way of talking about feelings is to use I messages. I messages are simply statements that communicate feelings, thoughts, or desires in a way that is direct but nonconfrontational.

For homework this week, we would like you to practice this skill with your child in a game format. Please see the attached worksheet for instructions. Please bring the cards back since they will be used for subsequent groups.

Next week, we will continue the discussion about feelings. We will discuss relaxation techniques as well as how we can change our negative thoughts into more positive thoughts.

Have a great week!

--Natalie
Siblings Helping Siblings

This game is played just like Go Fish, but instead of typical cards, cards depicting different feelings are used.

1. Deal 7 cards to each player. Make a "pond" of the remaining cards in the middle of the players.
2. Any matches that are already in a player's hands should be placed in front of that player.
3. The first player then asks another player if they have one of the same feelings cards so they can make a match. If the player they ask does not have the card, they must "go fish" for another card. Then the next player goes. Continue playing in this manner until one person gets rid of all of their cards.
4. Upon completion of the game, the participating child should take each of their matches and create an I message with that feeling. Pick three of their messages to record below and bring back to class.

> Example: I feel happy when I get to play tag with my friends. I wish I could do it more often. I feel hurt when you ignore me. I wish you would talk to me more.

1. I feel _____ when _____

_____

I wish _____.

2. I feel _____ when _____

_____

I wish _____.

3. I feel _____ when _____

_____

I wish _____.

4. I feel _____ when _____

_____

I wish _____.

APPENDIX M

SAMPLE LESSON

Siblings Helping Siblings

Class Two: Strengths and Weaknesses, Autism Spectrum Disorder

Objectives:

1. Children will identify their own strengths and weaknesses as well as those of their siblings.
2. Children will learn about autism spectrum disorders and how the disorder affects individuals differently.

Materials:

- Brightly colored paper for paper airplanes
- Butcher paper
- Construction paper
- Balloons
- Paper plate paddles
- Grass die cuts
- Strengths and Challenges worksheet
- Homework assignment and parent letter
- Superhero example
- Power Point/computer

Starter Activity: (20 minutes)

SibTree Questions

- If you were a superhero, who would be your sidekick?
- What would your mission be as a superhero?
- If you could have 1 superhero power, what would it be?
- If you were a superhero, would you tell who you were or keep it a secret?

Rescue Mission (Leader A)

The objective of this game is to remind group members of each other's names and information that was shared about each person the previous week.

When children are trickling in, give them two pieces of a paper.

Each of you needs to write three facts about yourself on each paper. Don't show others! Keep it a secret!

Help them fold the paper to make a paper airplane.

Take one (both) of your planes and when I say launch, fly your planes. Then I will countdown and say rescue. At that time, find a plane as quickly as you can, try not to find your own plane, and then go back to your seats quickly. Don't open your planes yet!

Count down from five and say "Launch!" Then countdown again and say "Rescue!" and each child should find a plane that they did not launch. Have the group sit down and have each child take turns reading the facts written on the airplane they rescued. After reading the facts, they should guess which group member wrote them.

Warm Up: (25-30 minutes)

Superhero Wall (Leader A)
Using big sheets of butcher paper, have each child create as superhero and have your own example ready to show them. Children should also write or draw their superhero's super strengths and kryptonite weaknesses. These will be used as examples in the lesson that follows on strengths and weaknesses. After about 20 minutes, have the children share their creations with the group. For children who finish this activity early, they may help paste the leaves/die cuts on to the Sibling Tree.

Lesson

Strengths and Weaknesses (15-20 minutes) (Leader A)

Use the superhero example as a starting point for discussing strengths and weaknesses. Not that everyone has things they are good at and things that are hard for them. Also note that everyone has different strengths and weaknesses in different areas (i.e. school subjects, sports, friends). Provide an example of your own strengths and weaknesses by making a chart similar to the one below. Make sure to highlight your own strengths and weaknesses across several domains. Pass out worksheets and have children write down at least three strengths and three challenges for themselves. Then

have them do the same for their siblings. Then have them share one of their own strengths and one of their own challenges.

Snack/Activity (10-15 minutes)
Highs and Lows (Leader B)

Lesson (25 minutes) (Leader A)

Autism Spectrum Disorders
Make a list of strengths and challenges outline. Have children take turns sharing what they wrote about their siblings. Discus what characteristics are associated with ASDs, adding any details that were not addressed when participants shared their outlines. Use power point to explain ASDs and then do Myths and Facts with powerpoint.

Ending Game (15 minutes)

Balloon Paddle Ball (Leader B)

Have 1-3 balloons blown up. Paddles are created by using large popsicle sticks glued to paper plates. It is everyone's job to keep the balloons from hitting the floor.

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